JVC

SERVICE MANUAL

EDITING CONTROL UNIT

RM-G810U

SPECIFICATIONS

Power source	: DC 12 V ⎓
Power consumption	: 6.6 W
Operating temperature range	: 5°C to 40°C
Dimensions	: 430(W) x 118(H) x 322(D) mm
Weight	: 6.0 kg (13.3 lbs)

VCR controls

Control buttons	: PLAY, REC, FF, REW, STOP, PAUSE/STILL, SEARCH, JOG
Dial search	: Continuously variable depending on the player and recorder models used.
Jog dial	: Provided

Editing controls

Edit modes	: Assemble and Insert
Edit-point memory	: Edit-in and edit-out points held in memory (preview, perform and review possible)
Edit-point shift	: Possible by frame in both directions
Editing accuracy	: Within ±2 frames
Preroll time	: Selectable 3 sec, 5 sec, 7 sec 10 sec

Counter display

Time counter	: Up to 9 hours, 59 minutes, 59 seconds, 29/24 frames
Display	: Total time/elapsed time of an edit/ edit-in and edit-out points/edit duration
Display medium	: LED

Accessories

Remote control cable x 2 (5 m/16 ft)

Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

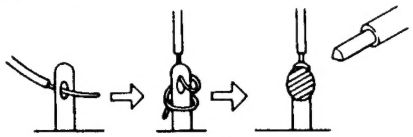


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

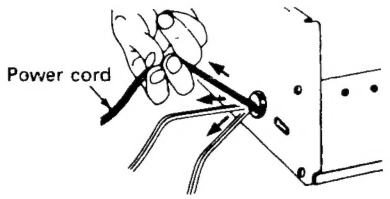


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

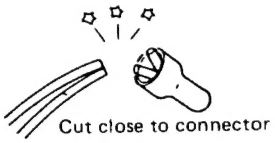


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

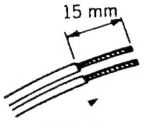


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

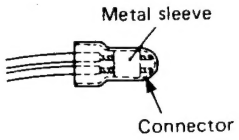


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

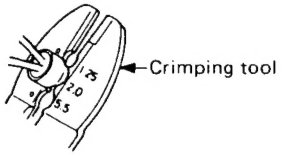


Fig. 6

(5) Check the four points noted in Fig. 7.

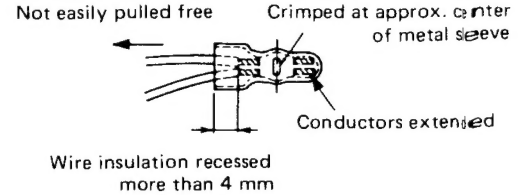


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

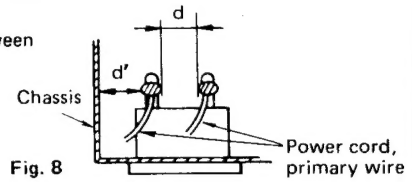


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

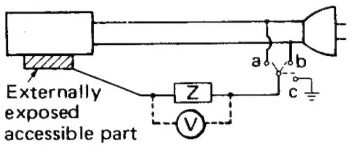


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

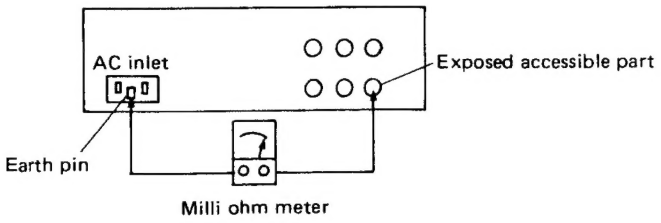


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

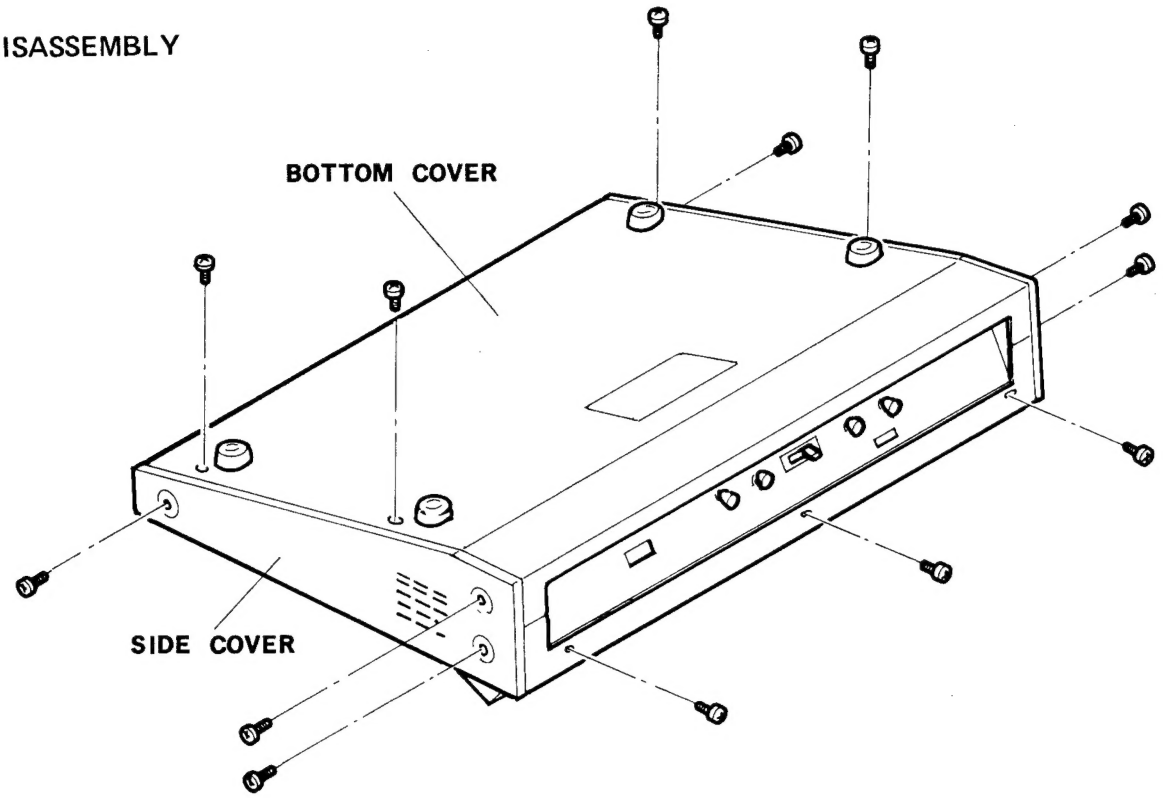
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

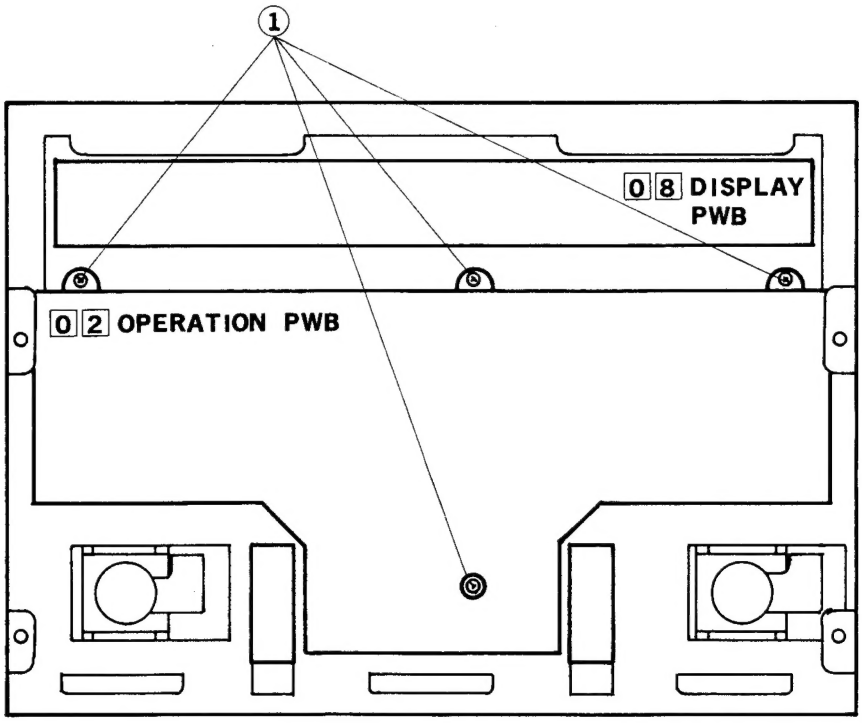
Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
GENERAL DESCRIPTION

1.1 DISASSEMBLY



Take out the screws indicated in the figure to remove the bottom cover.



Remove the search and jog knobs (see next Section), slide knobs and take out 4 screws ① to separate the top cover and main chassis.

1.2 SEARCH/JOG KNOBS AND CONTROL ASSEMBLY

1. Position the search/jog knob as indicated in Fig. 1.
2. Remove tire ① . Refer to Fig. 2.
3. Insert a metric hex wrench (1.5 mm) into hole A and loosen the setscrew. Remove the jog knob ② .
4. Take out 3 screws ③ and remove the search knob ④ .
5. Take out 4 screws ⑤ and remove the search/jog control assembly.

Note: Do not remove the jog board from the search/jog control assembly. Since adjustment requires a special fixture, the board is not replaced separately.

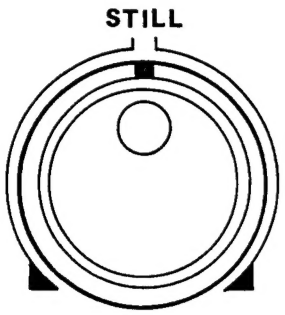


Fig. 1 Search/jog knobs position

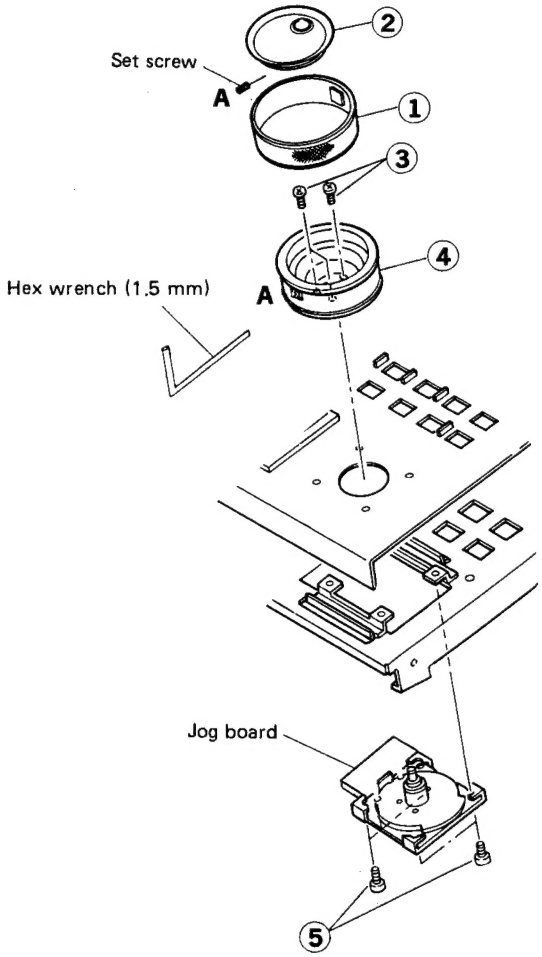


Fig. 2 Search/jog knobs and control assembly

1.3 SEARCH/JOG CONTROL ASSEMBLY INSTALLATION

1. When inserting the screws ⑤ of Fig. 2, tighten to the degree the structure does not distort (3 to 4 kg•cm torque). After tightening, apply screw sealant to screw hole.

Note 1: If the screws are too tight, the search plate and search knob will not turn smoothly. If this occurs, set the section horizontally and retighten the screws to 3 to 4 kg•cm torque (Fig. 3).

Note 2: Be sure to apply screw sealant to prevent loosening and loss.

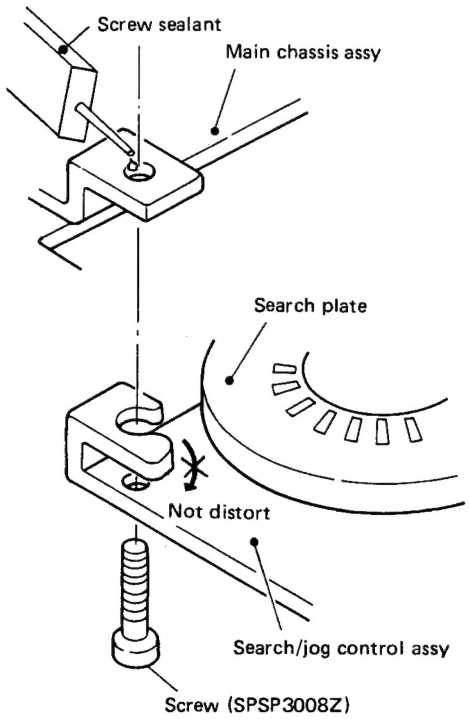
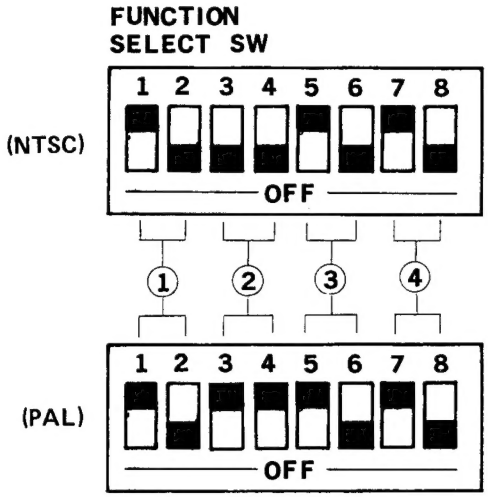


Fig. 3

1.4 DIP SWITCHES

1.4.1 Function select switches (rear panel)

These switches can be used for setting the following functions.



Factory setting

① EDIT IN TIMING ADJUSTMENT
② PREROLL TIMING ADJUSTMENT
③ RECORDER PB/REC REFERENCE SIGNAL SELECTION
④ PLAYER PB/REC REFERENCE SIGNAL SELECTION

<table>
<tr><th>No.</th><th>Item</th><th>Switch setting</th></tr>
<tr><td>1</td><td>Edit in timing</td><td>The recorder edit in point can be set for –3/–2/–1/0 frames.
<table>
<tr><th>SW No. \ Frame setting</th><th>–3 frames</th><th>–2 frames</th><th>–1 frames</th><th>0 frame</th></tr>
<tr><td>1</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>2</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
</table>
Following positions are recommended for the indicated models.
<table>
<tr><th>Model</th><th>Frame setting</th></tr>
<tr><td>BR-S810U/BR-S810E</td><td>–2 frames</td></tr>
<tr><td>BR-8600U/BR-8600E</td><td>0 frame</td></tr>
<tr><td>KR-M800U/KR-M800E</td><td>–3 frames</td></tr>
<tr><td>CR-850U/PR-900E</td><td>–3 frames</td></tr>
</table></td></tr>
<tr><td>2</td><td>Preroll timing</td><td>The preroll time can be set for 3/5/7/10 seconds.
Note: With MAIN board SW2-2 OFF, setting 7 or 10 seconds automatically produces the bump mode.
<table>
<tr><th>SW No. \ Preroll time</th><th>3 sec</th><th>5 sec</th><th>7 sec</th><th>10 sec</th></tr>
<tr><td>3</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td></tr>
<tr><td>4</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
</table></td></tr>
</table>

No.	Item	Switch setting
3	PB, REC Reference signal	Recorder and player readout counter detection can be set for control signal or capstan FG signal.

	SW No. / Readout counter detection	CTL PULSE	CAP FG
Recorder	5	ON	OFF
	6	OFF	ON
Player	7	ON	OFF
	8	OFF	ON

The following table indicates Function switch settings according to connected model.

Connected models				RM-G810U	
Models	45 pin connector out		Counter indication	Function select SW setting	
	32P (CTL)	35P (CAP FG)		SW5 SW7	SW6 SW8
BR-S810U/BR-S810E	CTL PULSE	**CTL/*CAP FG	CTL PULSE	ON	OFF
BR-8600U/BR-8600E	*CTL PULSE	* CAP FG	REEL FG	OFF	ON
BR-7700U/BR-6600E	*CTL PULSE	* CAP FG	REEL FG	OFF	ON
KR-M800U/KR-M800E	CTL PULSE	CTL PULSE	CTL PULSE	ON	OFF
CR-850U/PR-900E	CTL PULSE	CAP FG	**CAP FG/CTL	ON	OFF
CR-600U/PR-600E	CTL PULSE	CAP FG	**CAP FG/CTL	ON	OFF

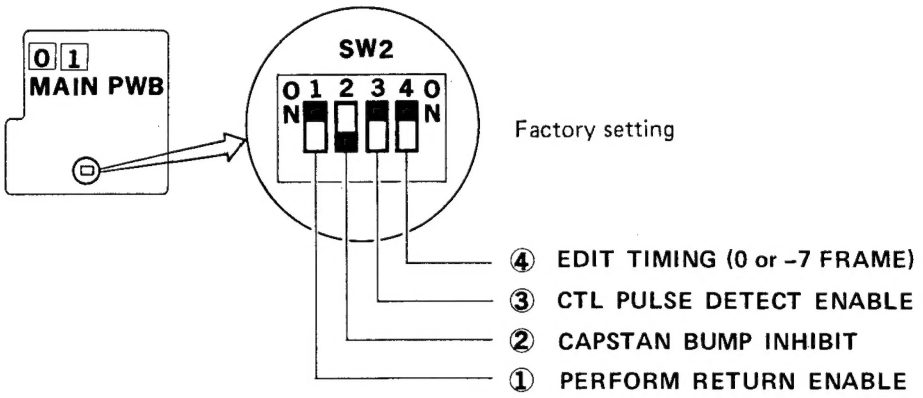
* No output during FF/REW.
** Selectable by internal switch.

Note: Use the following VCR switch settings when connecting the BR-S810U/E and KR-M800U/E.

- BR-S810U/E
  Syscon board DIP SW1-1: OFF.
  45-pin connector board SW1: CAP FG
- KR-M800U/E
  Syscon board DIP SW1-7: ON.

1.4.2 MAIN board DIP switches

These can be used for the following settings.



<table>
<tr><th>No.</th><th>Item</th><th>Switch setting</th></tr>
<tr><td>1</td><td>Perform return</td><td>Selects return function at completion of Perform.

<table><tr><th>Switch ①</th><th>Setting effect</th></tr><tr><td>ON</td><td>Operation at Perform end Still, then Search mode to OUT point.</td></tr><tr><td>OFF</td><td>Still, no return function.</td></tr></table></td></tr>
<tr><td>2</td><td>Capstan Bump</td><td>Selects external capstan search CMD output. Selects capstan bump mode ON/OFF.
For capstan bump mode, preroll time is set for 7 or 10 seconds.

<table><tr><th>Switch ②</th><th>Setting effect</th></tr><tr><td>ON</td><td>No capstan bump ; external capstan search CMD (pin 42 of 45-pin connector) output not produced.</td></tr><tr><td>OFF</td><td>Capstan bump ; external capstan search CMD output (recorder mainframe V Speed CTL voltage changed from 2.9 V to 5 to 6 V).</td></tr></table></td></tr>
<tr><td>3</td><td>CTL pulse detect</td><td>Selects control pulse for editing.

<table><tr><th>Switch ③</th><th>Setting effect</th></tr><tr><td>ON</td><td>Edit inhibited in absence of CTL signal; buzzer sounds (see Note).</td></tr><tr><td>OFF</td><td>Edit enabled without CTL signal (set Function Select switch for CAP FG).</td></tr></table>
Note: With KR-M800U/E or BR-S810U/E (SW1 of 45-pin connector board set to CTL), since CTL pulse output appears at both pins 32 and 33, NO CTL cannot be detected.
Therefore, even with switch ON, edit is not inhibited and buzzer does not sound.</td></tr>
</table>

No.	Item	Switch setting
4	Edit Timing (0 or –7 Frame)	

Switch ④	Setting effect
ON	Enables Edit in/out point setting with preset edit timing sw.
OFF	Enables Edit in/out point setting to –7 frames.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 BEFORE ADJUSTING

2.1.1 Power supply

Power is supplied and the unit is operable when connected to VTRs. However, although 12 V is obtained via pin 34 of the 45-pin connector, since the recorder and player side circuits are independent, power is obtained from both machines.

2.1.2 Main circuit 5 V

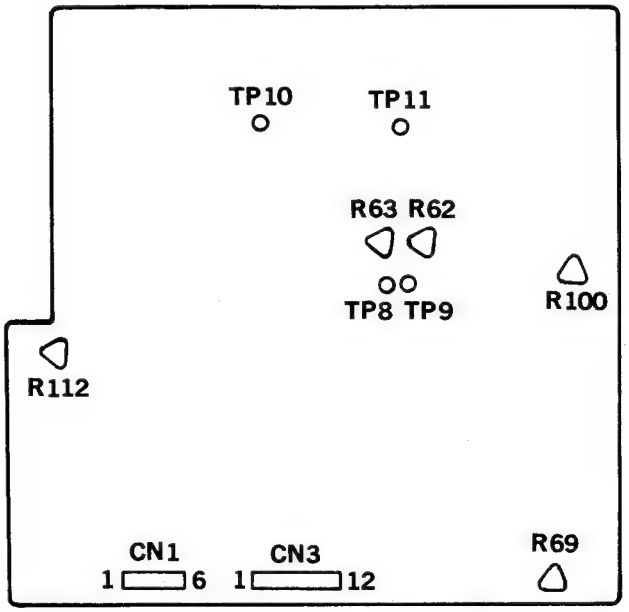
Before proceeding to other checks and adjustments, with both recorder and player connected, check according to the table.

Check point / Measure side	CN1 [1 pin]	CN3 [9 pin]	CN3 [10 pin]
Recorder	4.9 ± 0.2 V		5.2 ± 0.2 V
Player	4.9 ± 0.2 V	5.2 ± 0.2 V	

Notes:
- Supply power only to the side being measured. Disconnect the cable of the other side.
- Also, for subsequent adjustments and checks, supply power only to the side being adjusted.
- Use the accessory cable (5 m).

2.2 MAIN CIRCUIT

Check points and adjustments (parts side)

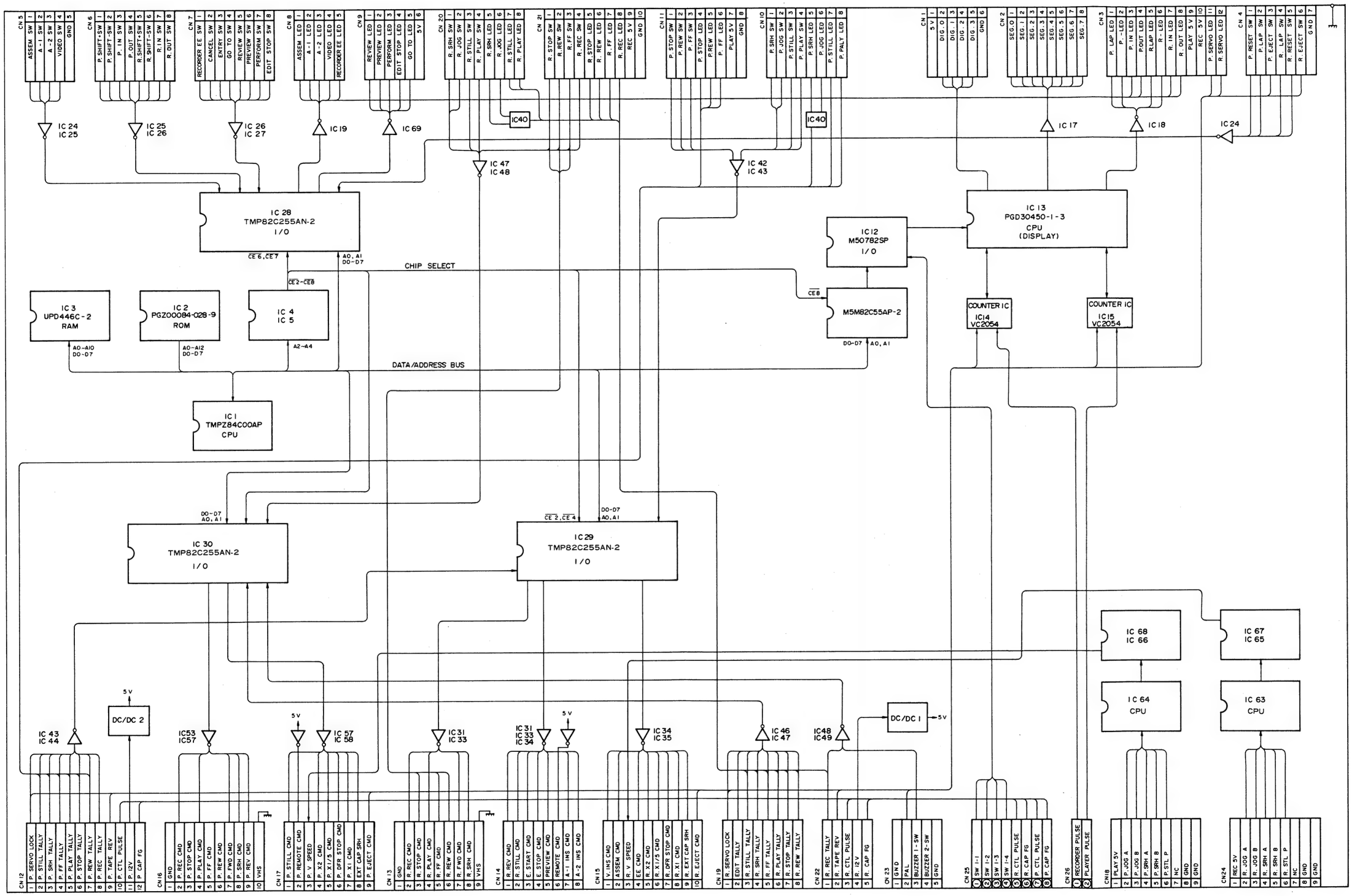


No.	Item	Check point	Adjustment parts	Mode	Description
1	Search voltage	TP10 [Player] TP11 [Recorder]	R112 [Player] R69 [Recorder]	STILL	① Set Search dials to the STILL position. ② Use a digital voltmeter to measure the testpoints. ③ Adjust R112 for TP10 and R69 for TP11 to obtain 2.7 ±0.05 V.
				SEARCH	④ In the Search mode, operate the Search dial and confirm the following voltages.
2	CAP BUMP 1	TP9	R63	STOP	① Connect a digital voltmeter to TP9. Adjust R63 for 5.10 ±0.05 V.
3	CAP BUMP 2	TP8	R62	STOP	① Connect a digital voltmeter to TP8. Adjust R62 for 5.9 ±0.05 V.
4	Buzzer volume	—	R100	STOP	① Set rear panel BUZZER switch to BUZZER 1. ② Turn R100 counter-clockwise and confirm that buzzer volume decreases. ③ Turn R100 fully clockwise and confirm maximum volume. ④ Set R100 to about center position.

No.	Search dial position	Voltage (V)	No.	Search dial position	Voltage (V)
1	STILL	2.70	6		5.00
2		3.05	7	x 1 (1st click)	5.90
3		3.45	8		7.50
4		3.85	9	(2nd click)	9.40
5		4.35	10	Maximum	11.50

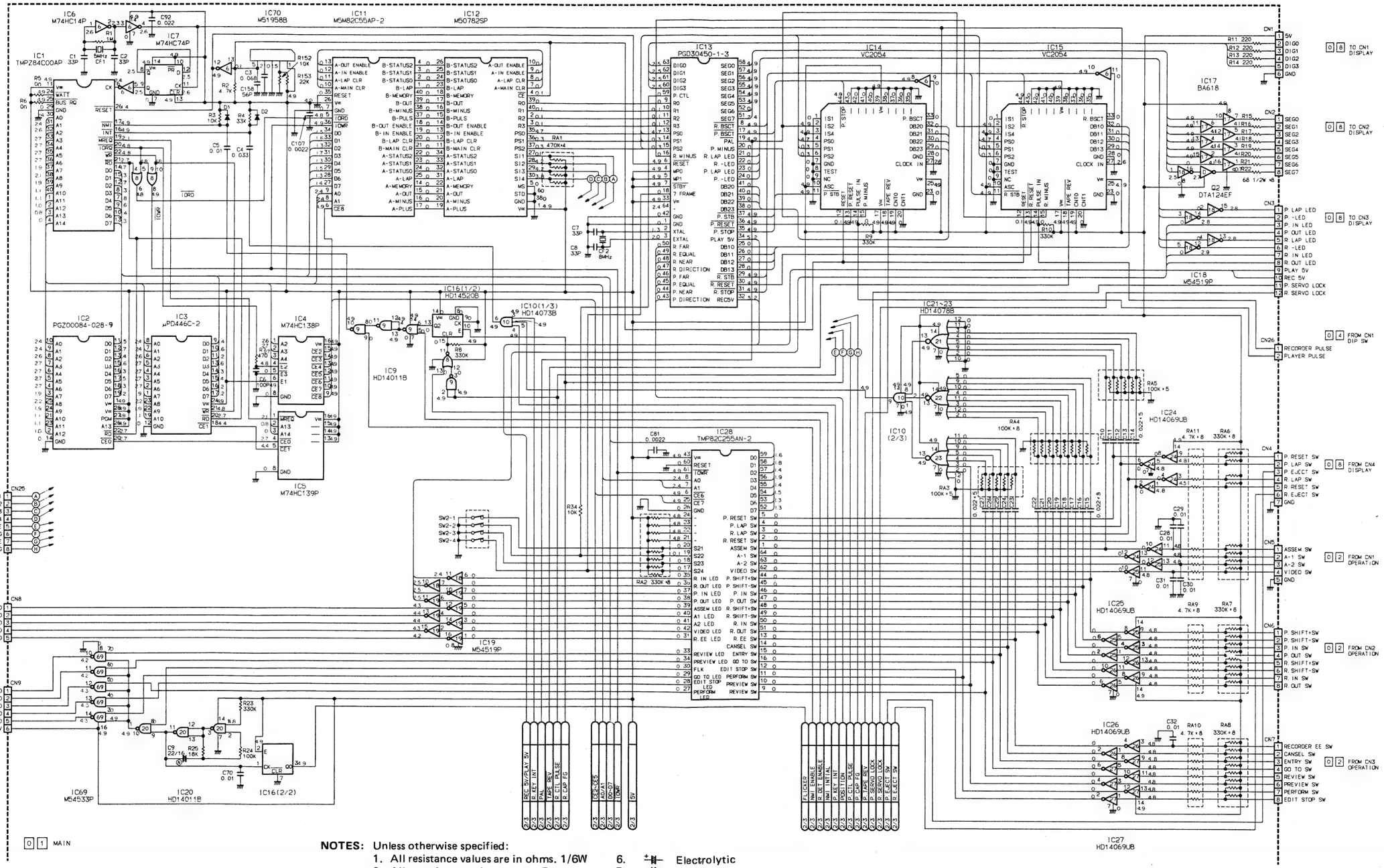
SECTION 3
CHARTS AND DIAGRAMS

3.1 BLOCK DIAGRAM



3.2 MAIN SCHEMATIC DIAGRAM

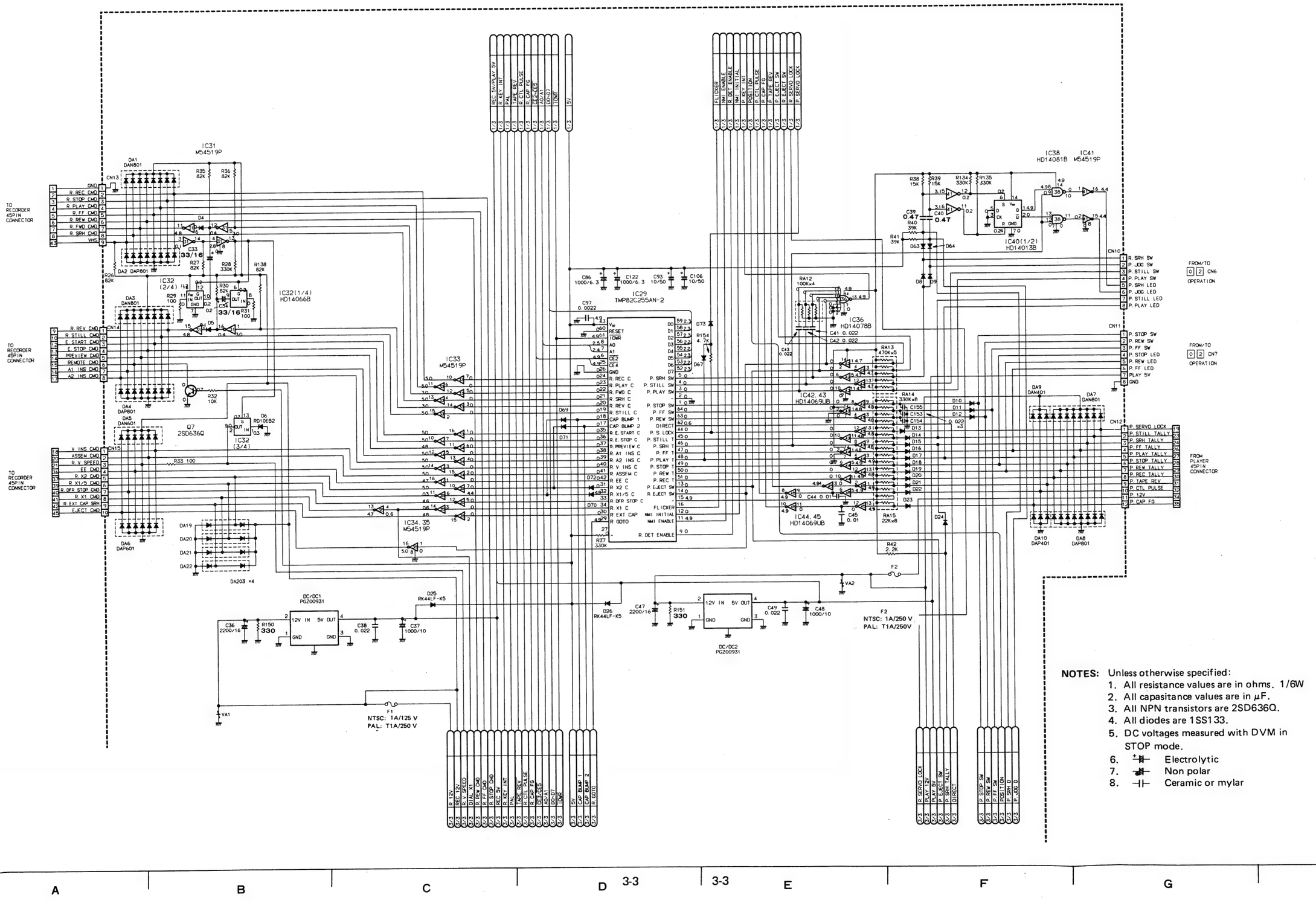
– DIAGRAM 1/3 –



NOTES: Unless otherwise specified:

1. All resistance values are in ohms. 1/6W
2. All capasitance values are in μF.
3. All NPN transistors are 2SD636Q.
4. All diodes are 1SS133.
5. DC voltages measured with DVM in STOP mode.
6. Electrolytic
7. Non polar
8. Ceramic or mylar

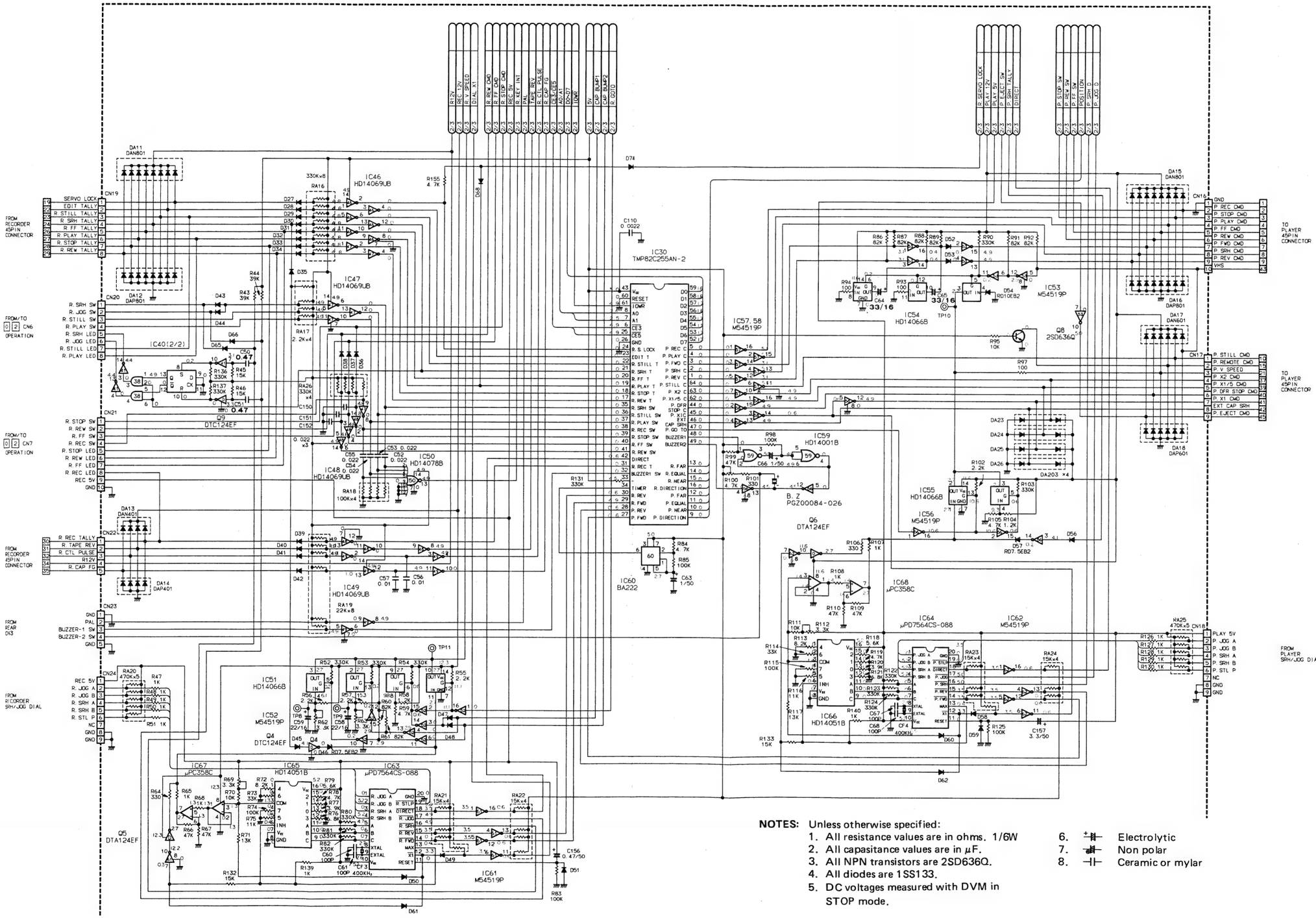
– DIAGRAM 2/3 –



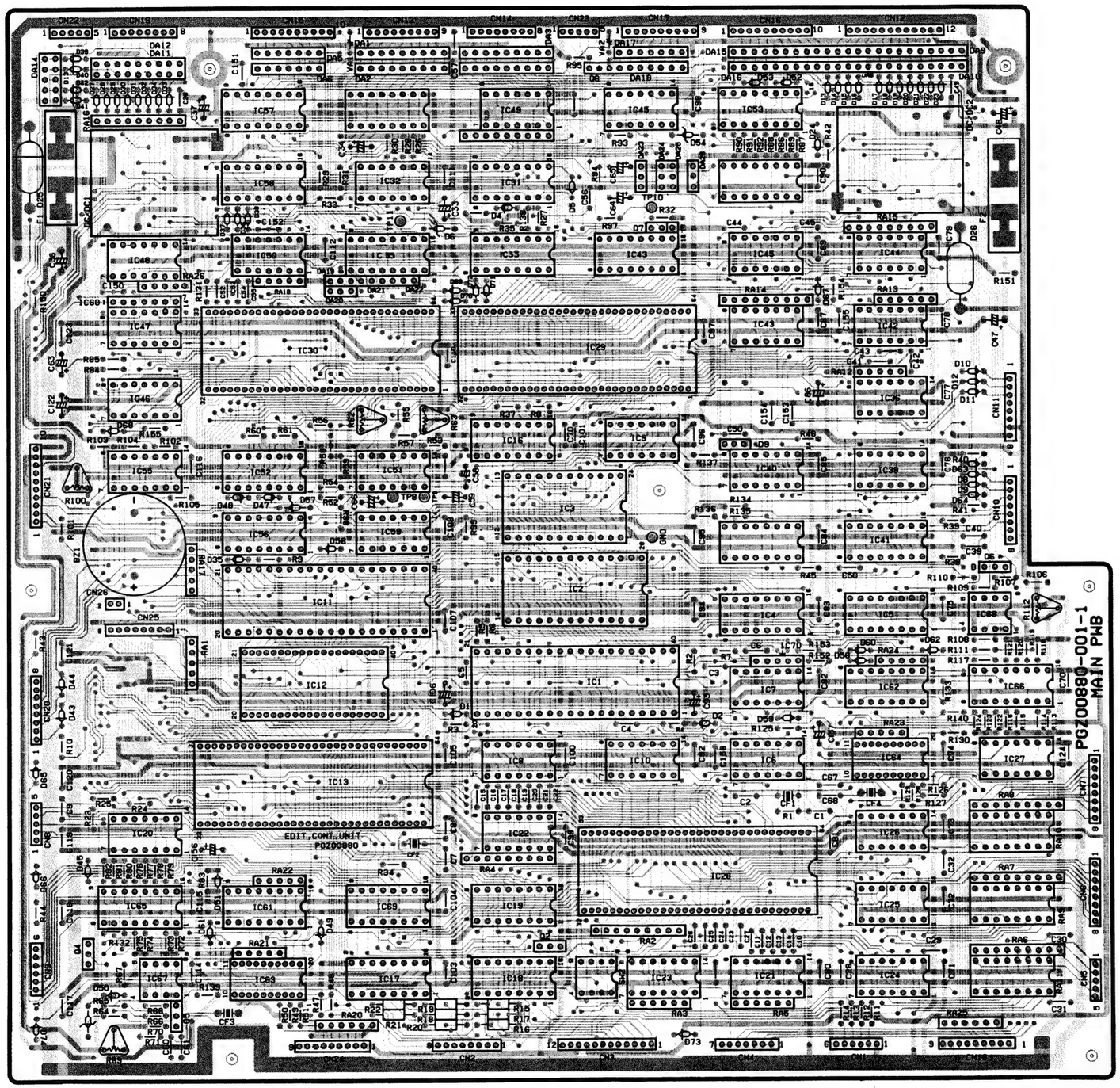
NOTES: Unless otherwise specified:

1. All resistance values are in ohms. 1/6W
2. All capasitance values are in μF.
3. All NPN transistors are 2SD636Q.
4. All diodes are 1SS133.
5. DC voltages measured with DVM in STOP mode.
6. Electrolytic
7. Non polar
8. Ceramic or mylar

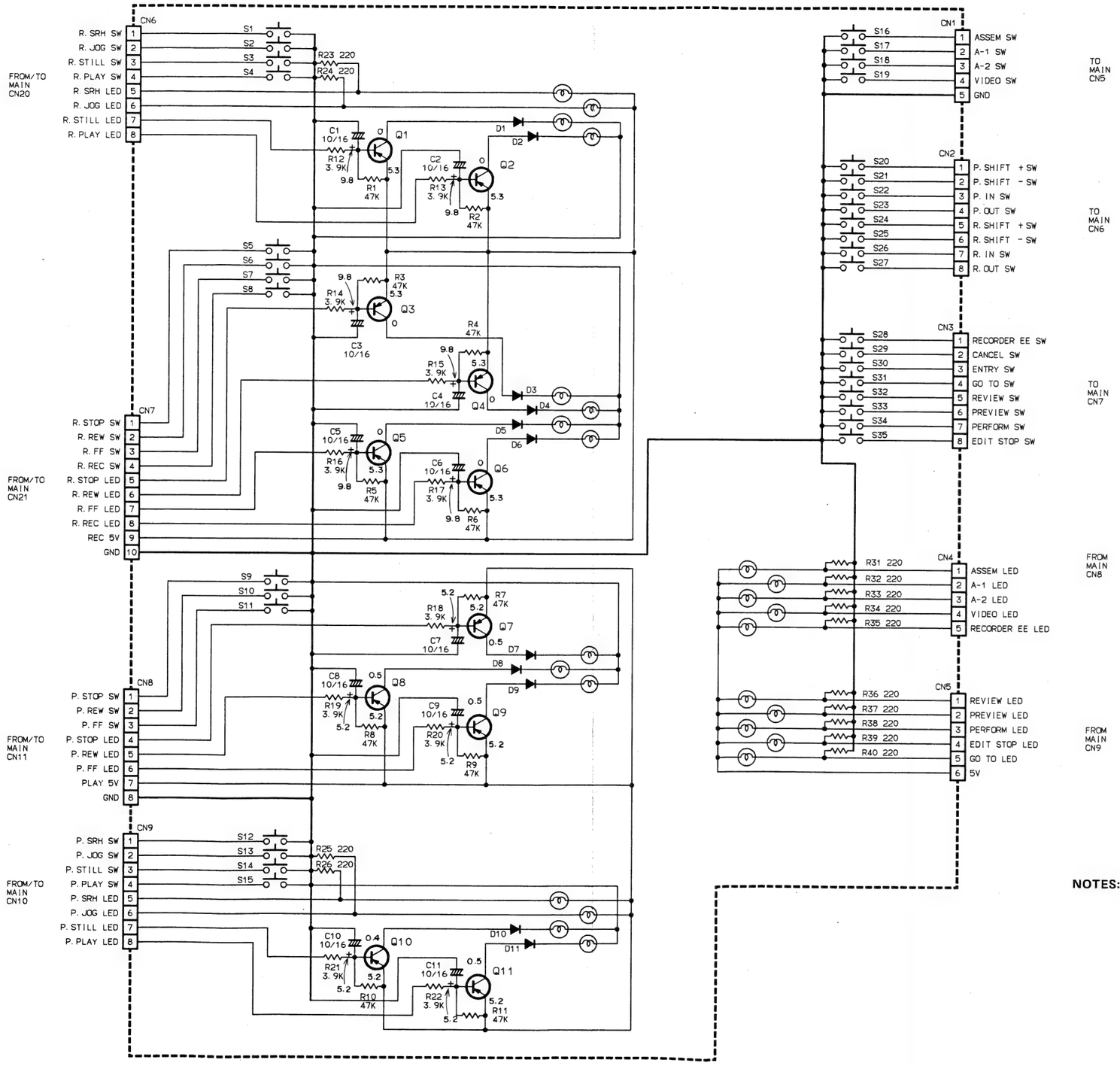
– DIAGRAM 3/3 –


IC46 HD14069UB
IC47 HD14069UB
IC48 HD14069UB
IC49 HD14069UB
IC50 HD14078B
IC51 HD14066B
IC52 M54519P
IC53 M54519P
IC54 HD14066B
IC55 HD14066B
IC56 M54519P
IC57, 58 M54519P
IC59 HD14001B
IC60 BA222
IC61 M54519P
IC62 M54519P
IC63 µPD7564CS-088
IC64 µPD7564CS-088
IC65 HD14051B
IC66 HD14051B
IC67 µPC358C
IC68 µPC358C
IC30 TMP82C255AN-2
IC40(2/2)
Q4 DTC124EF
Q5 DTA124EF
Q6 DTA124EF
Q8 2SD636Q
Q9 DTC124EF
B. Z PG200084-026
FROM RECORDER 45PIN CONNECTOR
FROM/TO CN6 OPERATION
FROM RECORDER 45PIN CONNECTOR
FROM REAR CNS
FROM RECORDER SRH/JOG DIAL
TO PLAYER 45PIN CONNECTOR
TO PLAYER 45PIN CONNECTOR
FROM PLAYER SRH/JOG DIAL
SERVO LOCK
EDIT TALLY
R. STILL TALLY
R. SRH TALLY
R. FF TALLY
R. PLAY TALLY
R. STOP TALLY
R. REW TALLY
R. SRH SW
R. JOG SW
R. STILL SW
R. PLAY SW
R. SRH LED
R. JOG LED
R. STILL LED
R. PLAY LED
R. STOP SW
R. REW SW
R. FF SW
R. REC SW
R. STOP LED
R. REW LED
R. FF LED
R. REC LED
REC 5V
GND
R. REC TALLY
R. TAPE REV
R. CTL PULSE
R12V
R. CAP FG
REC 5V
R. JOG A
R. JOG B
R. SRH A
R. SRH B
R. STL P
NC
GND
GND
P. REC CMD
P. STOP CMD
P. PLAY CMD
P. FF CMD
P. REW CMD
P. FWD CMD
P. SRH CMD
P. REV CMD
VHS
P. STILL CMD
P. REMOTE CMD
P. V SPEED
P. X2 CMD
P. X1/5 CMD
P. DFR STOP CMD
P. X1 CMD
EXT CAP SRH
P. EJECT CMD
PLAY 5V
P. JOG A
P. JOG B
P. SRH A
P. SRH B
P. STL P
NC
GND
GND
R. SERVO LOCK
PLAY 12V
PLAY 5V
P. EJECT SW
P. SRH TALLY
DIRECT
P. STOP SW
P. REW SW
P. FF SW
POSITION
P. JOG A
P. JOG B
R. 12V
REC 12V
R. V SPEED
DIAL X1
R. REW CMD
R. FF CMD
R. STOP CMD
REC 5V
R. KEY INT
DIAL X2
TAPE REV
R. CTL PULSE
R. CAP FG
LRA/CS
SCLK
D0-D7
IORQ
5V
CAP BUMP1
CAP BUMP2
R. GOTO
R155 4.7K
D74
D68
C110 0.0022
330K×8
RA16
RA17 2.2K×4
RA18 100K×4
RA19 22K×8
RA20 470K×5
RA21 15K×4
RA22 15K×4
RA23 15K×4
RA24 15K×4
RA25 470K×5
RA26 330K×4
DA11 DAN801
DA12 DAP801
DA13 DAN401
DA14 DAP401
DA15 DAN801
DA16 DAP801
DA17 DAN601
DA18 DAP601
DA203 ×4
CN16
CN17
CN18
CN19
CN20
CN21
CN22
CN23
CN24
TP8
TP9
TP10
TP11
D61
D62
D68
D74
NOTES: Unless otherwise specified:
1. All resistance values are in ohms. 1/6W
2. All capasitance values are in µF.
3. All NPN transistors are 2SD636Q.
4. All diodes are 1SS133.
5. DC voltages measured with DVM in STOP mode.
6. Electrolytic
7. Non polar
8. Ceramic or mylar

3.3 MAIN CIRCUIT BOARD



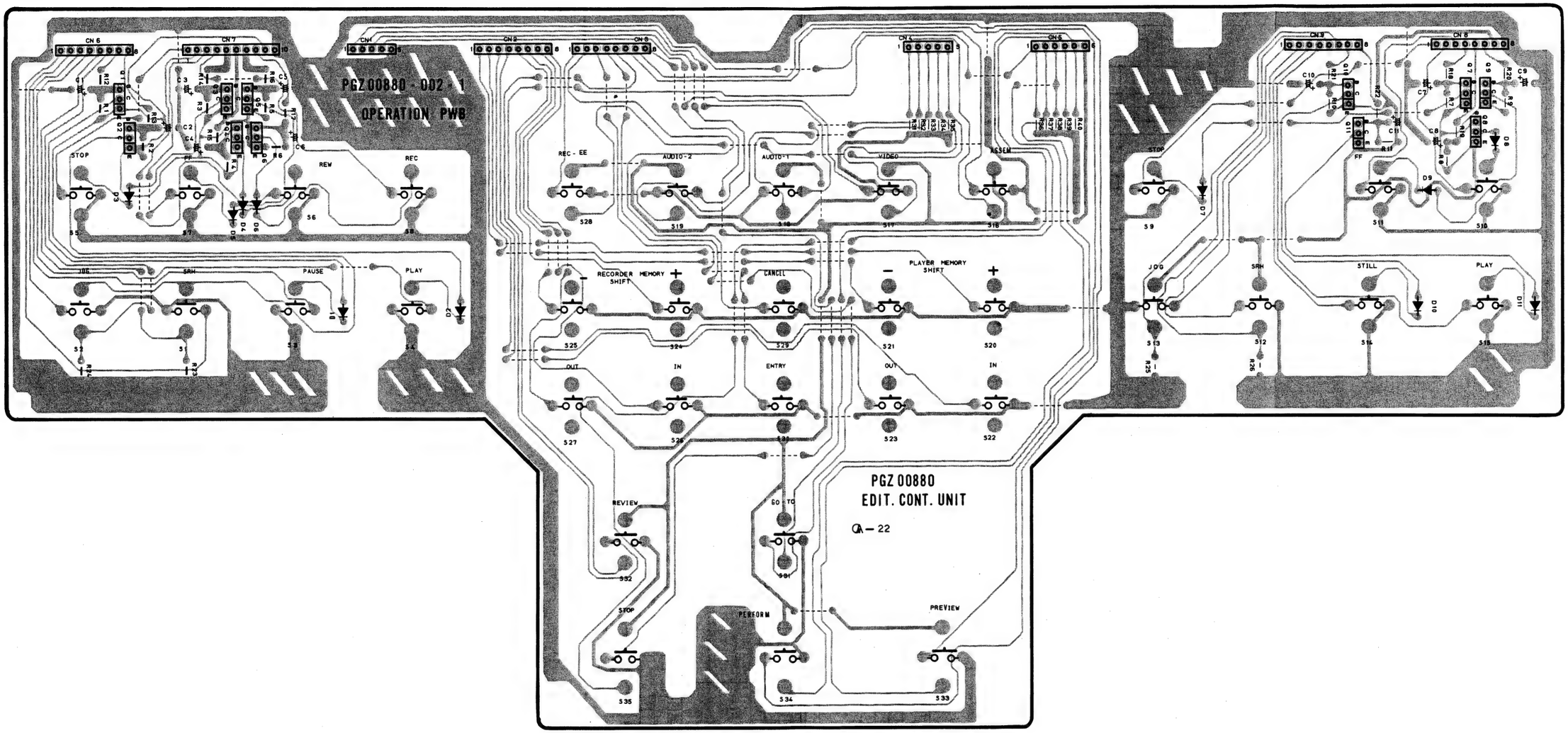
3.4 OPERATION SCHEMATIC DIAGRAM



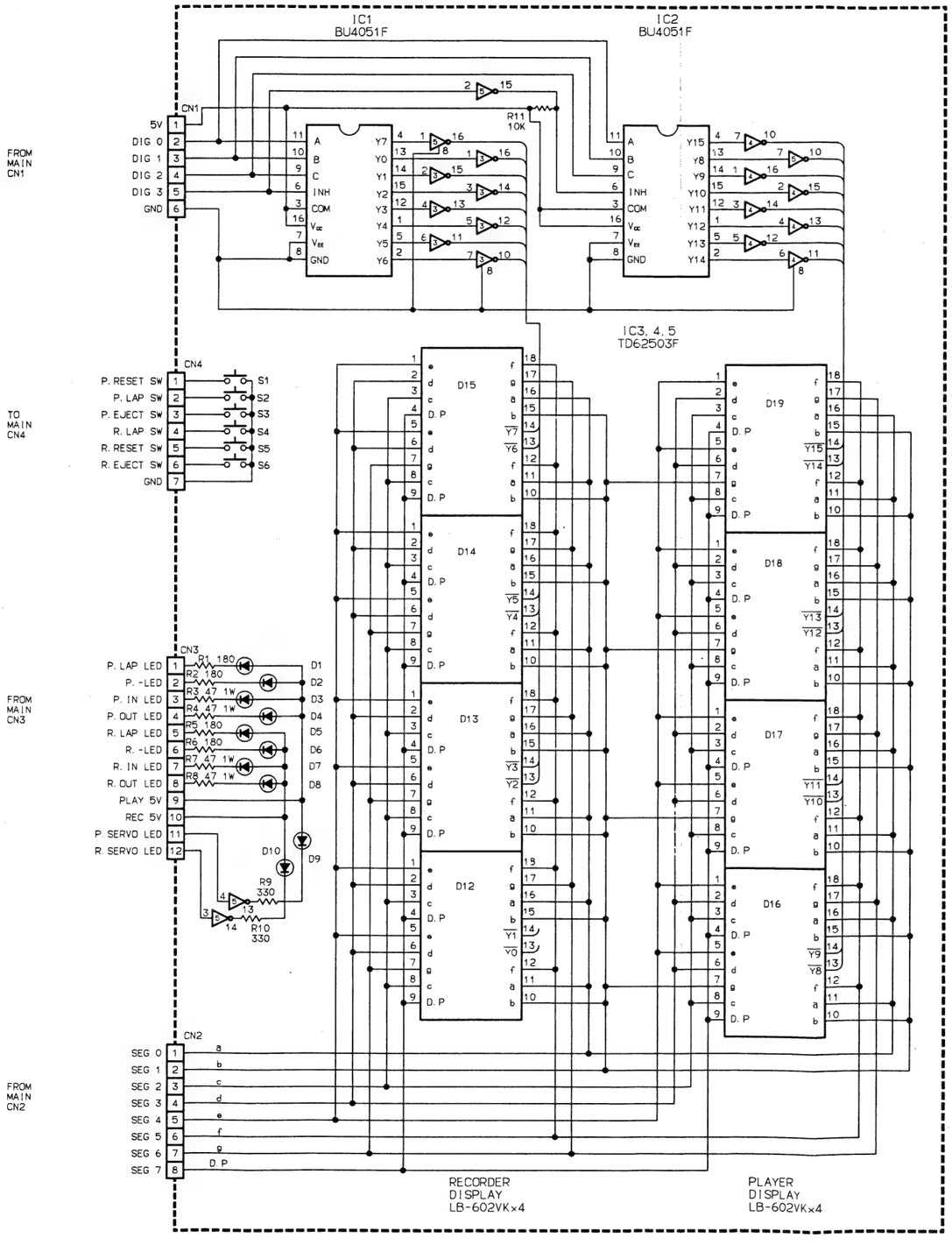
NOTES: Unless otherwise specified:

1. All resistance values are in ohms. 1/6W
2. All capasitance values are in μF.
3. All PNP transistors are 2SB644.
4. All diodes are 1SS133.
5. DC voltages measured with DVM in STOP mode.
6. ⊣(+)⊢ Electrolytic

3.5 OPERATION CIRCUIT BOARD

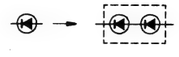


3.6 DISPLAY SCHEMATIC DIAGRAM

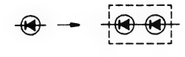


NOTES: Unless otherwise specified:

1. All resistance values are in ohms. 1/6W
2. ⊣⊢ Electrolytic
3. D1, D2, D5, D6 LD-001VR

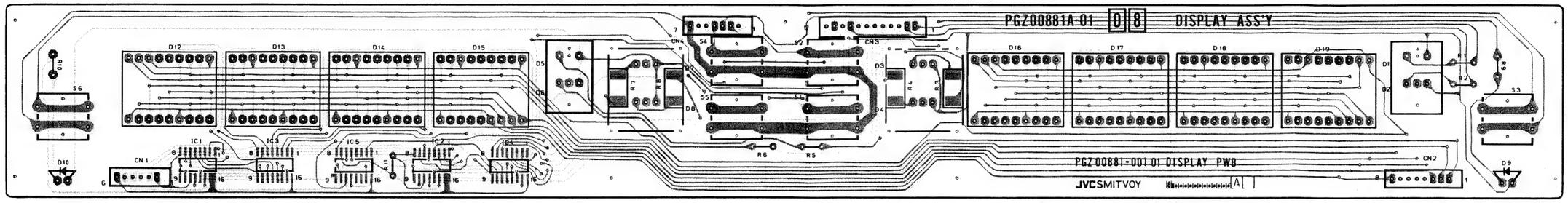


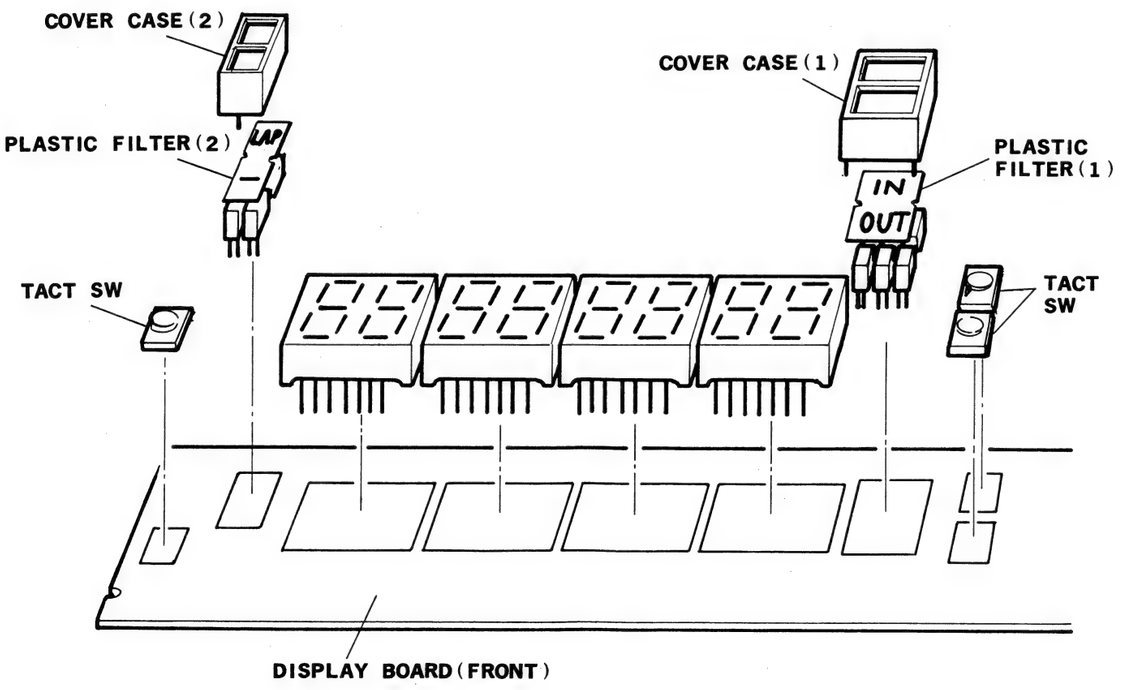
4. D3, D4, D7, D8 LD-603MG



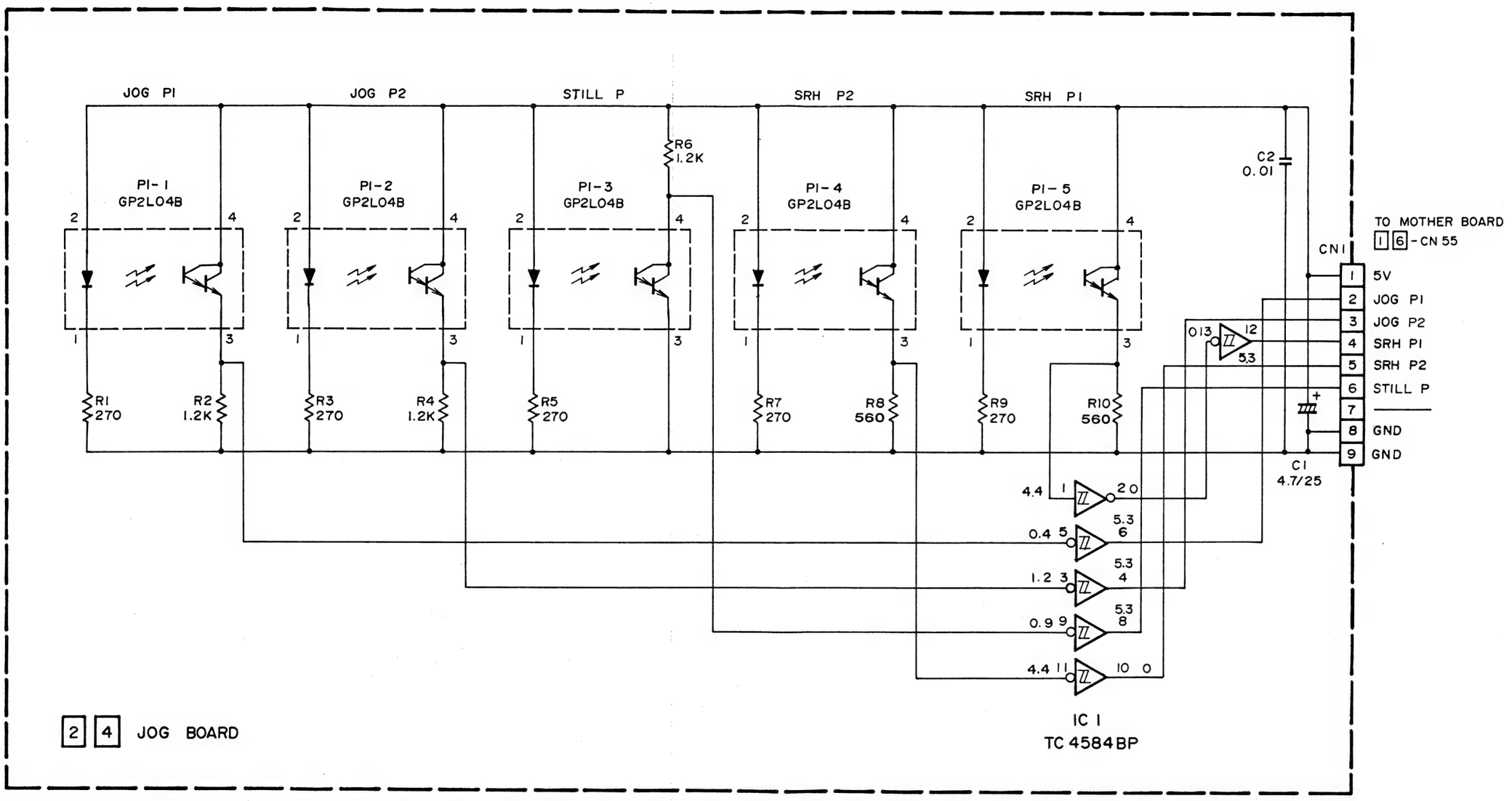
5. D9, D10 SLB-25MG

3.7 DISPLAY CIRCUIT BOARD





3.8 JOG SCHEMATIC DIAGRAM

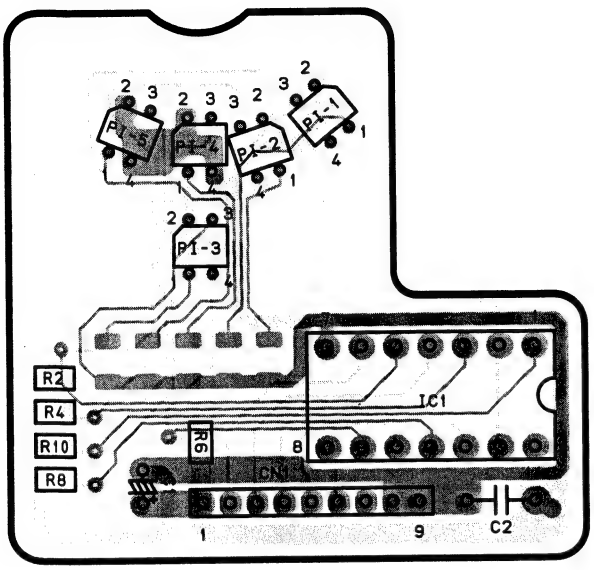


NOTES: Unless otherwise specified:

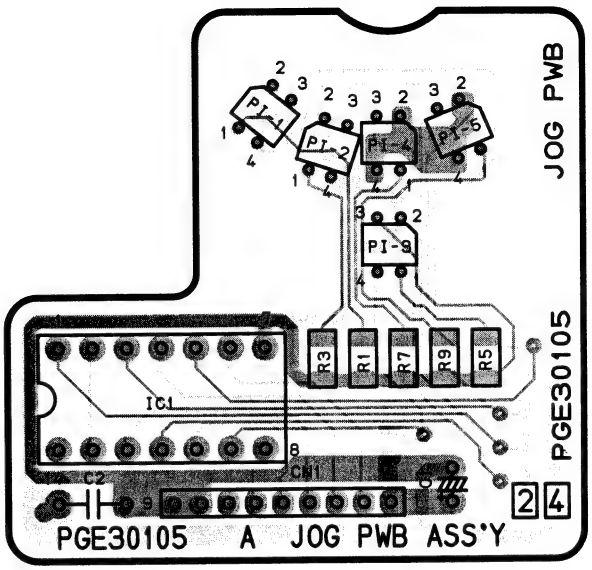
1. All resistance values are in ohms, 1/6W
2. All capasitance values are in μF.
3. ⊣‖⊢ Electrolytic
4. ⊣|⊢ Ceramic

3.9 JOG CIRCUIT BOARD

PARTS SIDE

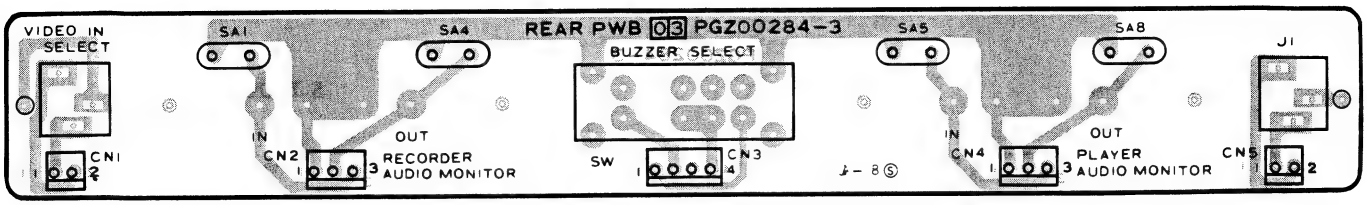


SOLDER SIDE

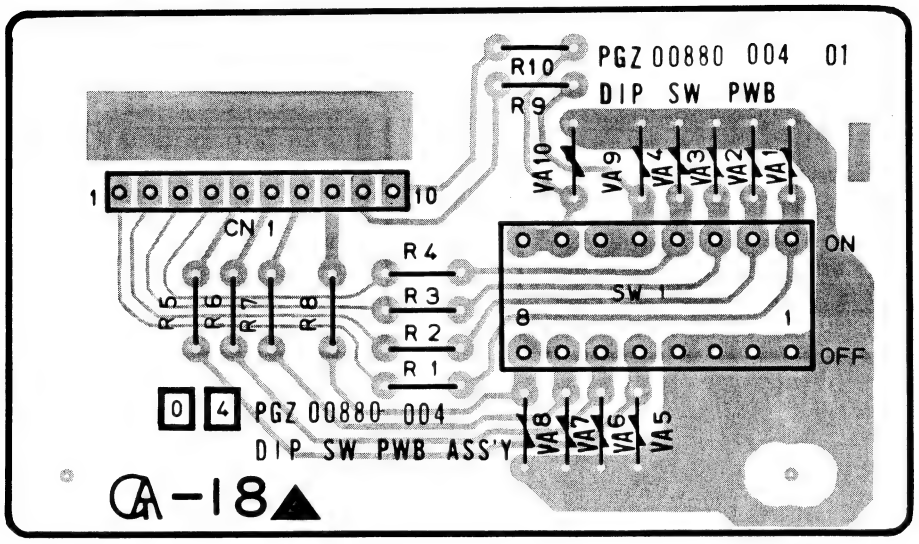


3.10 REAR, DIP SW, FRAME SELECT AND SLIDE VR CIRCUIT BOARDS

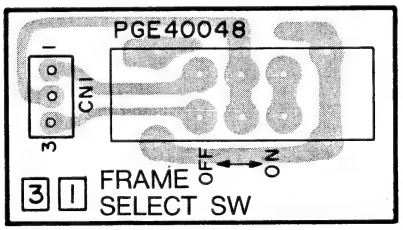
– REAR –



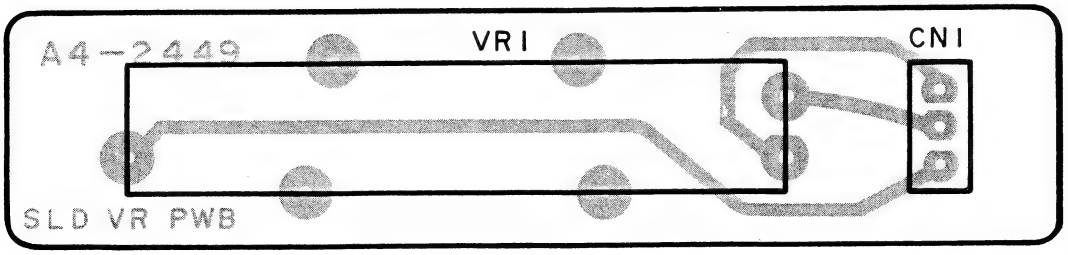
– DIP SWITCH –



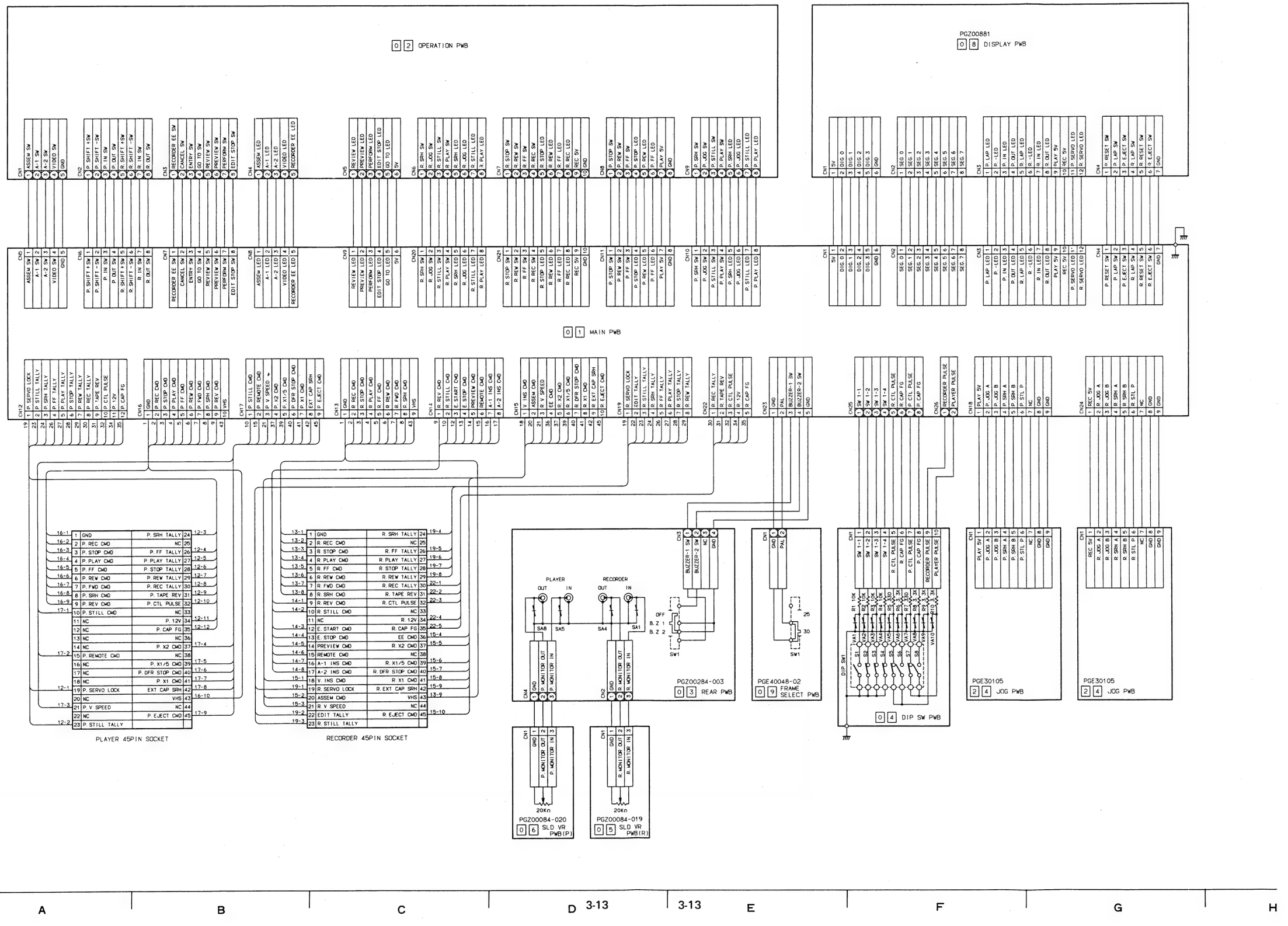
– FRAME SELECT SW –



– SLIDE VOLUME –



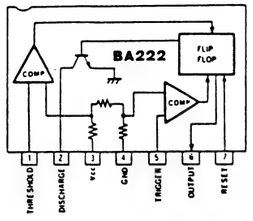
3.11 OVERALL WIRING



3.12 IC BLOCK DIAGRAMS

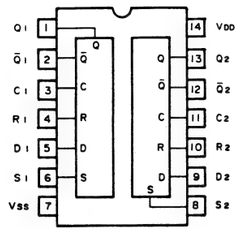
– BA222 –

Monolithic Timer



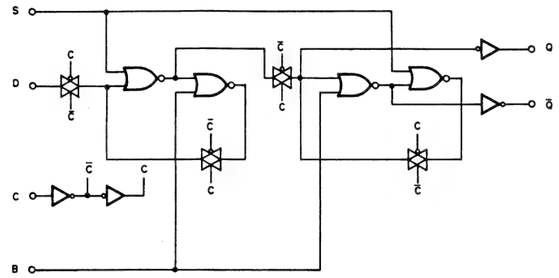
– HD14013B –

Dual D-type Flip-Flop



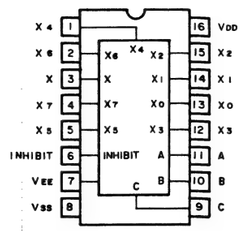
INPUT				OUTPUT	
Clock *	Data	Reset	Set	Q	Q̄
↑	0	0	0	0	1
↑	1	0	0	1	0
↓	×	0	0	Q	Q̄
×	×	1	0	0	1
×	×	0	1	1	0
×	×	1	1	1	1

*: Level change
x: Either 1 or 0



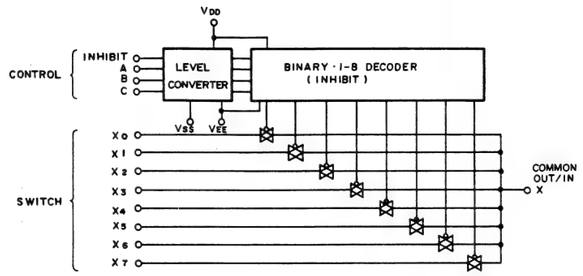
– HD14051B –

8-channel Analog Multiplexer/Demultiplexer



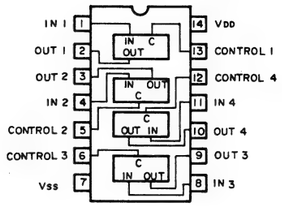
CONTROL INPUT				ON
Inhibit	C	B	A	SWITCH
0	0	0	0	X_0
0	0	0	1	X_1
0	0	1	0	X_2
0	0	1	1	X_3
0	1	0	0	X_4
0	1	0	1	X_5
0	1	1	0	X_6
0	1	1	1	X_7
1	×	×	×	–

x: Either 1 or 0



– HD14066B –

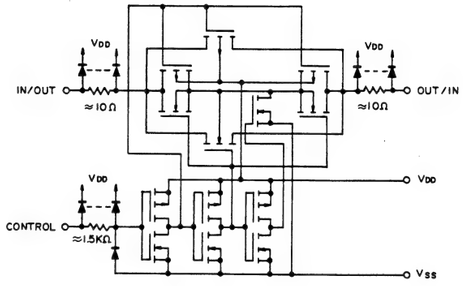
Quadruple Analog Switch/Quadruple Multiplexer



CONTROL	SWITCH
0	OFF
1	ON

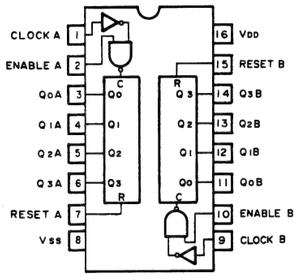
$V_{SS} \leqq V_{in} \leqq V_{DD}$
$V_{SS} \leqq V_{out} \leqq V_{DD}$

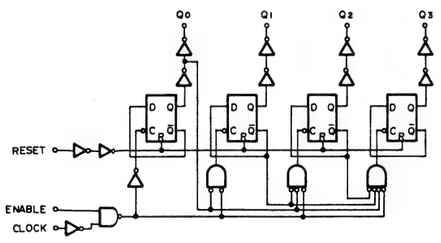
Vcontrol	Vin - Vout resistance
V_{SS}	$> 10^9\ \Omega$ typ
V_{DD}	$3 \times 10^2\ \Omega$ typ



– HD14520B –

Dual Binary Up Counter

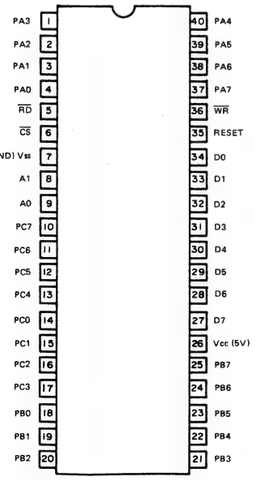


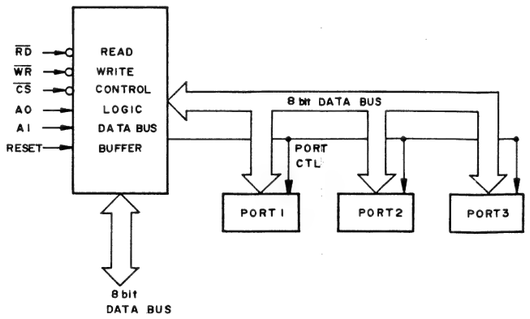


Clock	Enable	Reset	Operating
↑	1	0	Count
0	↓	0	Count
↓	×	0	No change
×	↑	0	No change
↑	0	0	No change
1	↓	0	No change
×	×	1	$Q_0 \sim Q_3 = 0$

x: Either 1 or 0

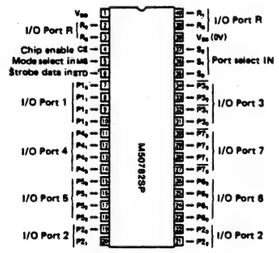
– M5M82C55AP-2 –

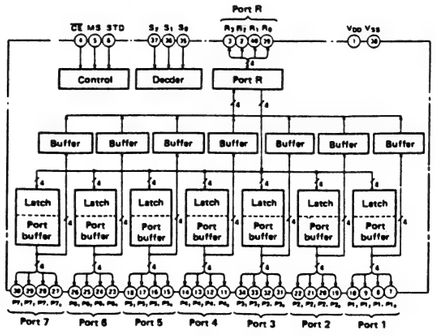




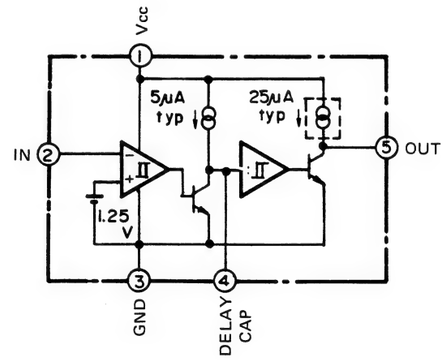
– M50782SP –

Input/Output Expander





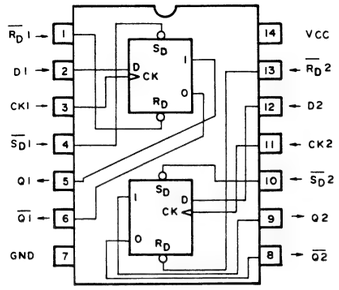
– M51958BL –

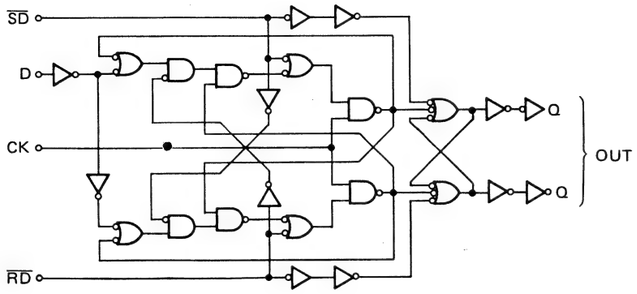


3-14

— M74HC74P —

Dual D-type Flip-Flop with Set and Reset





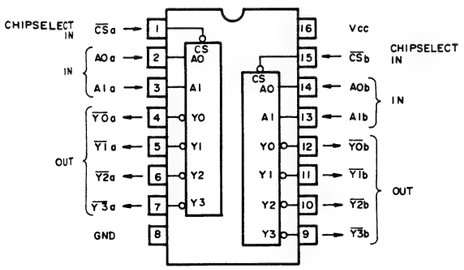
TRUTH TABLE NOTE 1

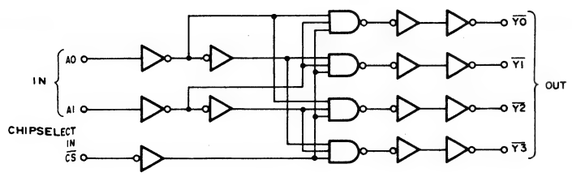
入力				出力	
$\overline{S_D}$	$\overline{R_D}$	CK	D	Q	$\overline{Q}$
L	H	×	×	H	L
H	L	×	×	L	H
L	L	×	×	H *	H *
H	H	L	×	Q°	$\overline{Q}^\circ$
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	H	×	Q°	$\overline{Q}^\circ$
H	H	↓	×	Q°	$\overline{Q}^\circ$

NOTE 1 x : Either "L" or "H"
↑ : Rise from "L" to "H"
↓ : Fall from "H" to "L"
Q° : Q output state before clock input change
$\overline{Q}^\circ$: $\overline{Q}$ output state before clock input change
* : Q = $\overline{Q}$ = "H" when SD = RD = "L".
But when SD and RD are simultaneously "H", Q and $\overline{Q}$ states are unpredictable.

— M74HC139P —

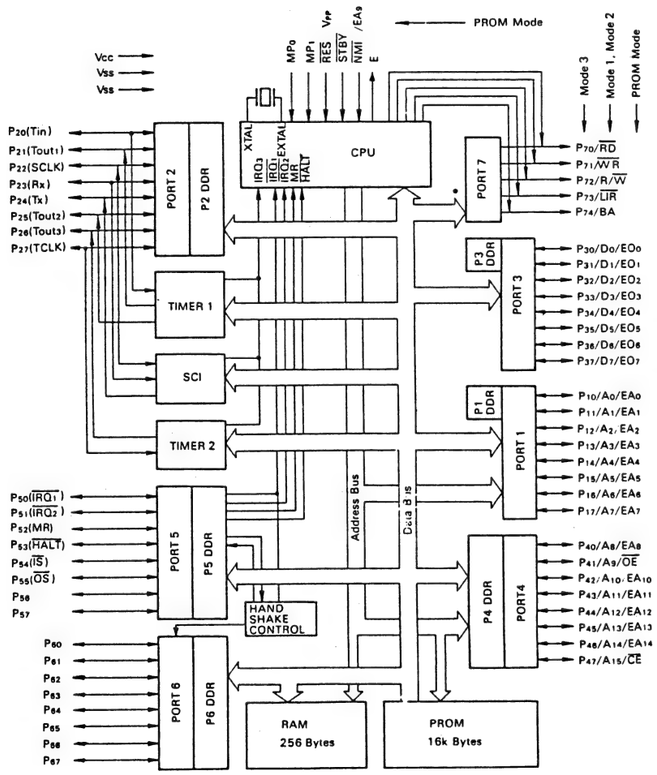
Dual 1-of-4 Decoder/Demultiplexer





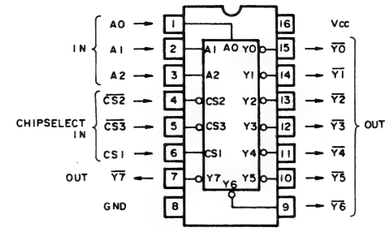
— PGD30450-1-3 —

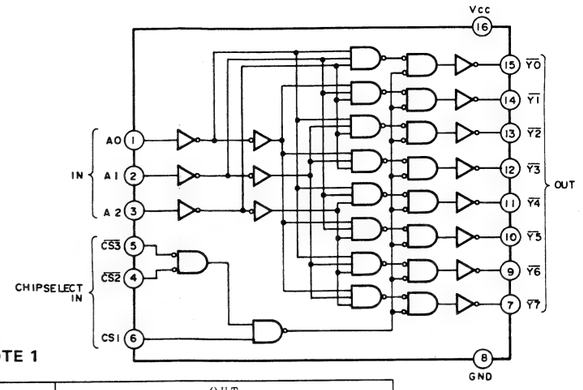
C MOS MCU (Micro Computer Unit)



— M74HC138P —

1-of-8 Decoder/Demultiplexer





TRUTH TABLE NOTE 1

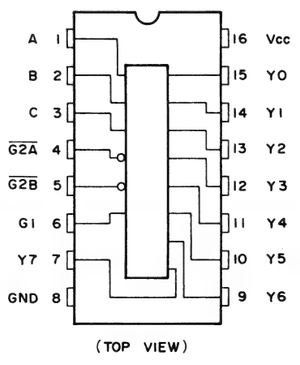
IN					OUT							
CS1	$\overline{CSX}$	A2	A1	A0	$\overline{Y0}$	$\overline{Y1}$	$\overline{Y2}$	$\overline{Y3}$	$\overline{Y4}$	$\overline{Y5}$	$\overline{Y6}$	$\overline{Y7}$
X	H	X	X	X	H	H	H	H	H	H	H	H
L	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	H	H	H	H	H	H	H
H	L	L	L	H	H	L	H	H	H	H	H	H
H	L	L	H	L	H	H	L	H	H	H	H	H
H	L	L	H	H	H	H	H	L	H	H	H	H
H	L	H	L	L	H	H	H	H	L	H	H	H
H	L	H	L	H	H	H	H	H	H	L	H	H
H	L	H	H	L	H	H	H	H	H	H	L	H
H	L	H	H	H	H	H	H	H	H	H	H	L

NOTE 1 $\overline{CSX} = \overline{CS2} + \overline{CS3}$
x : Either "H" or "L"

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	GND	17	$\overline{P.BSCT}$	33	VCC	49	R.EQUAL
2	XTAL	18	0/6 FRAME	34	PLAY 5V	50	R.FAR
3	EXTAL	19	$\overline{PAL}$	35	$\overline{P.STOP}$	51	SEG7
4	MP0	20	P.MINUS	36	$\overline{P.RESET}$	52	SEG6
5	MP1	21	R.LAP LED	37	$\overline{P.STB}$	53	SEG5
6	$\overline{RESET}$	22	R.−LED	38	DB23	54	SEG4
7	$\overline{STBY}$	23	P.LAP LED	39	DB22	55	SEG3
8	$\overline{R.BSCT}$	24	P.−LED	40	DB21	56	SEG2
9	R0	25	DB10	41	DB20	57	SEG1
10	R1	26	DB11	42	GND	58	SEG0
11	R2	27	DB12	43	P.DIRECTION	59	CAPSTAN BUMP
12	R3	28	DB13	44	P.NEAR	60	DIG3
13	PS0	29	$\overline{R.STB}$	45	P.EQUAL	61	DIG2
14	PS1	30	$\overline{R.RESET}$	46	P.FAR	62	DIG1
15	PS2	31	$\overline{R.STOP}$	47	R.DIRECTION	63	DIG0
16	R.MINUS	32	REC 5V	48	R.NEAR	64	E

—TC74HC238F —

3-to-8 Line Decoder



(TOP VIEW)

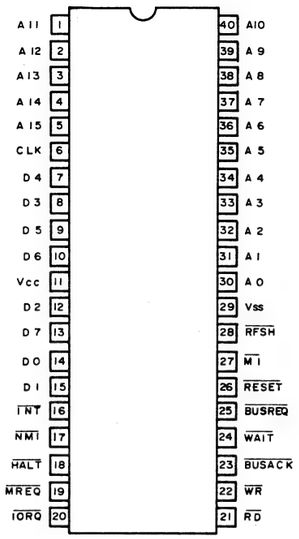
TRUTH TABLE

INPUTS						OUTPUTS								SELECTED OUTPUT
ENABLE			SELECT			Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	
G2B	G2A	G1	C	B	A									
X	X	L	X	X	X	L	L	L	L	L	L	L	L	NONE
X	H	X	X	X	X	L	L	L	L	L	L	L	L	NONE
H	X	X	X	X	X	L	L	L	L	L	L	L	L	NONE
L	L	H	L	L	L	H	L	L	L	L	L	L	L	Y0
L	L	H	L	L	H	L	H	L	L	L	L	L	L	Y1
L	L	H	L	H	L	L	L	H	L	L	L	L	L	Y2
L	L	H	L	H	H	L	L	L	H	L	L	L	L	Y3
L	L	H	H	L	L	L	L	L	L	H	L	L	L	Y4
L	L	H	H	L	H	L	L	L	L	L	H	L	L	Y5
L	L	H	H	H	L	L	L	L	L	L	L	H	L	Y6
L	L	H	H	H	H	L	L	L	L	L	L	L	H	Y7

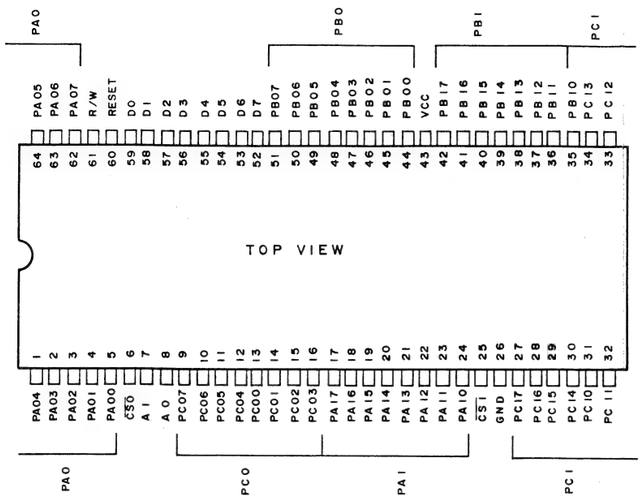
X : DON'T CARE

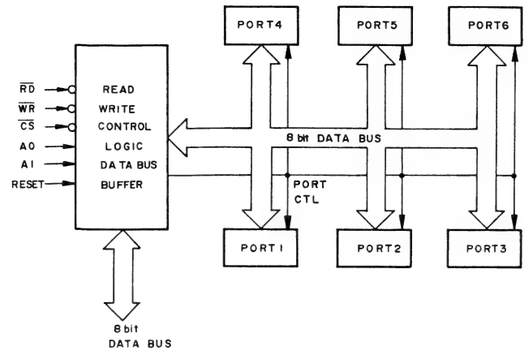
3-15

– TMPZ84C00AP –



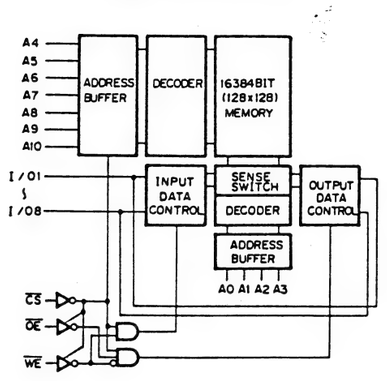
– TMP82C255AN-2 –





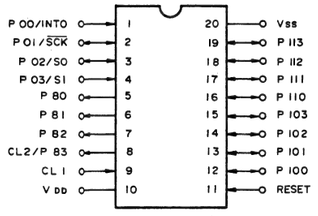
– UPD336C-2 –

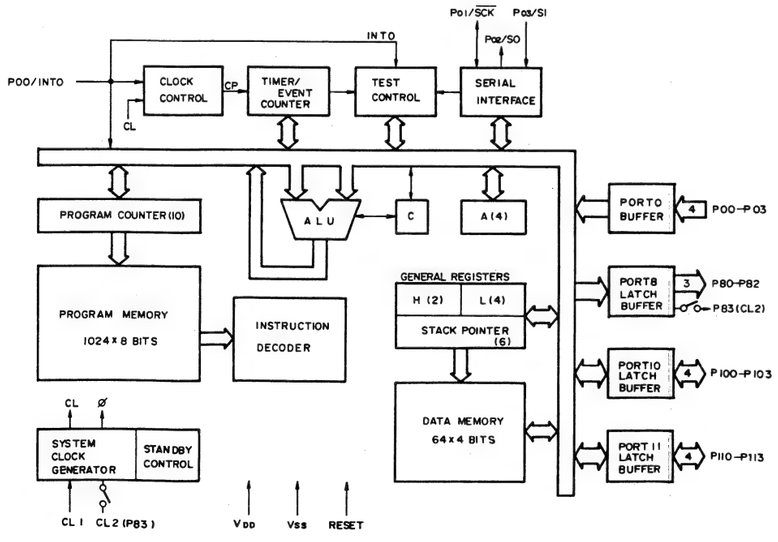
16384 Bit Static Raw



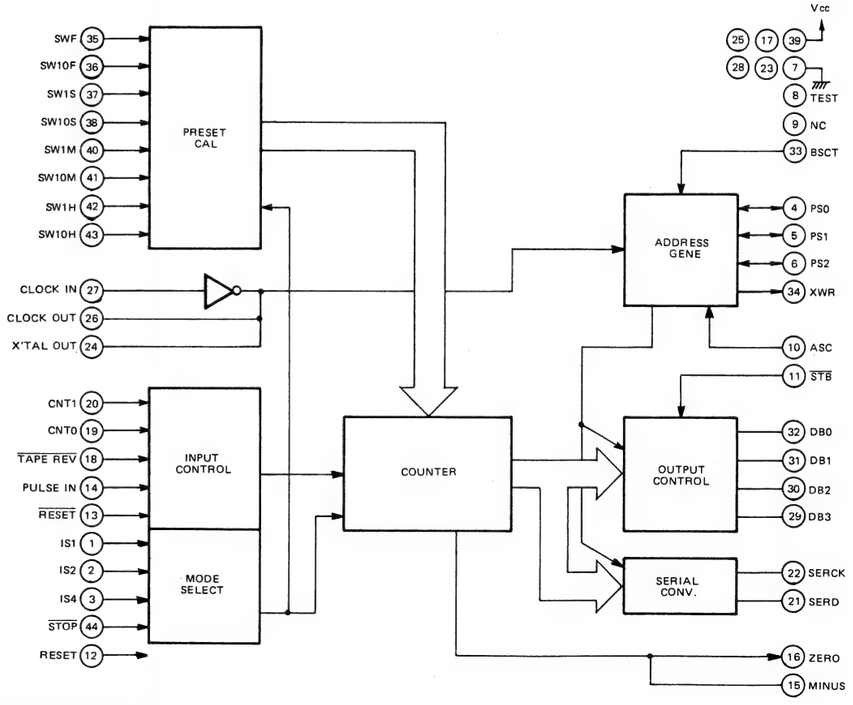
– μPD7564CS –

1 chip-4-bit Microcomputer





– VC2054 –



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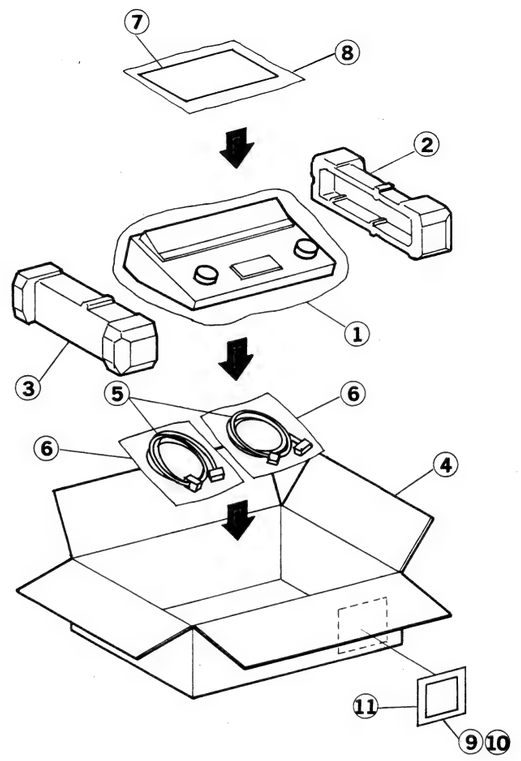
SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety.
Replace only with specified part numbers.

NOTE:
- **"X" indicates quantity per set.**

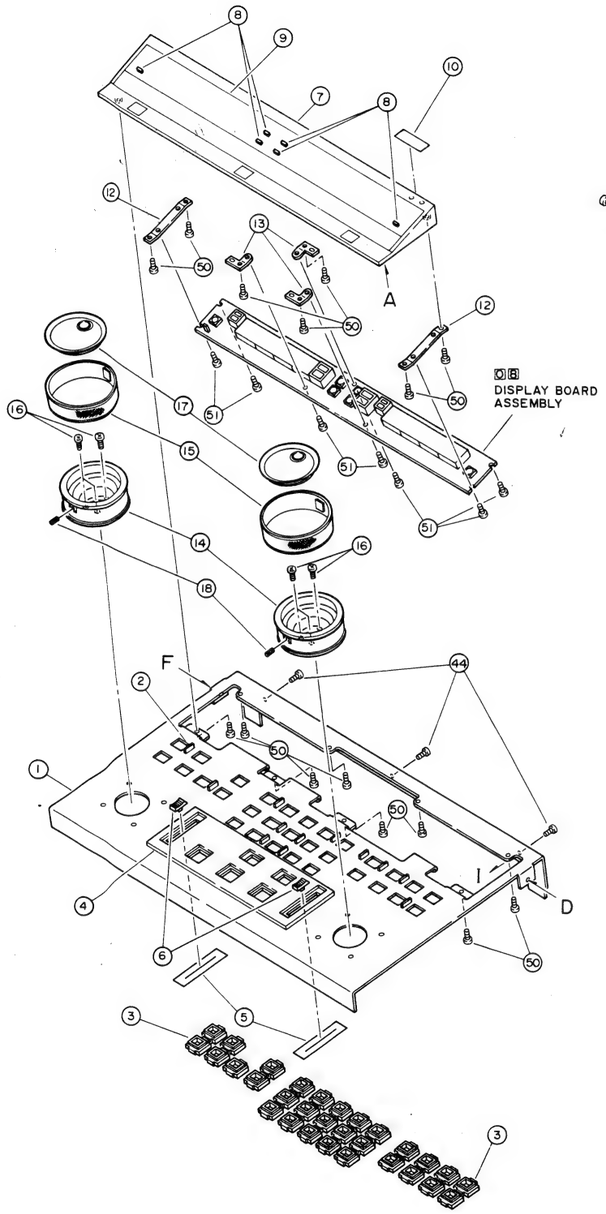
4.1 PACKING ASSEMBLY

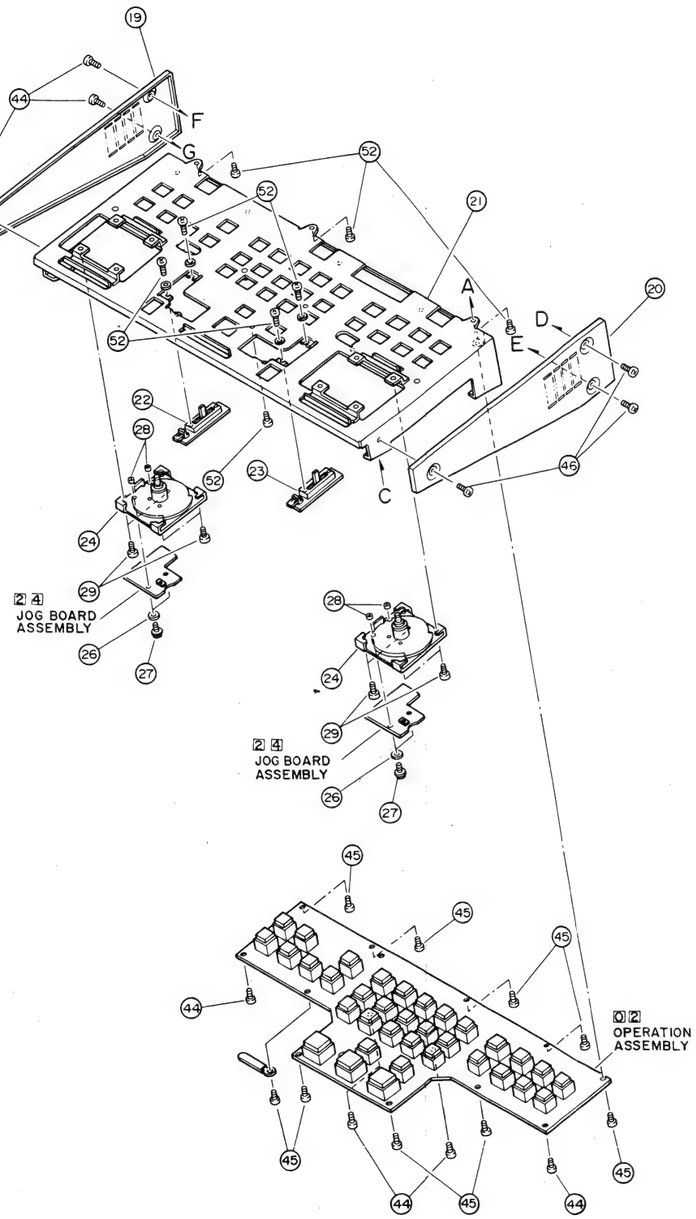


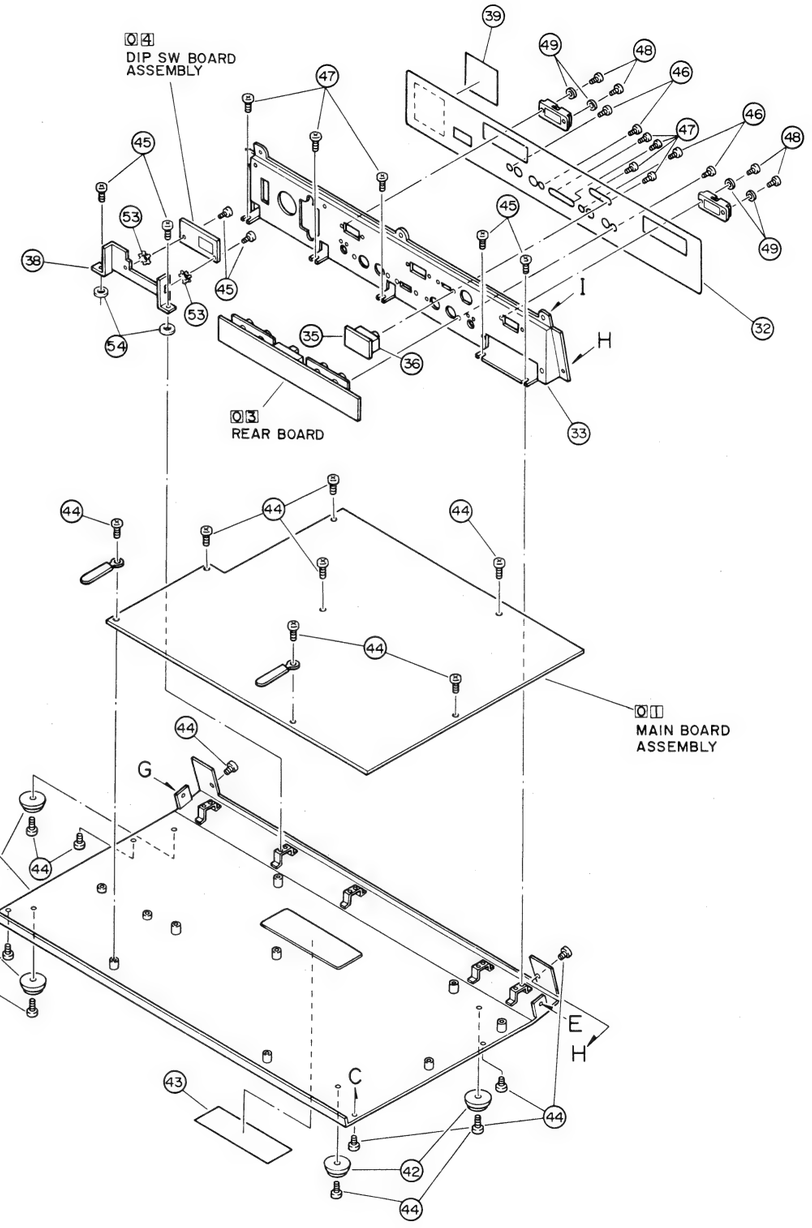
#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			PACKING <M1>
	1	QPGA060-05005	POLY BAG
	2	PGD20094-1	CUSHION(R)
	3	PGD20094-2	CUSHION(L)
	4	PGD20095-05	PACKING CASE
	5	PU45574C	CABLE, X2
	6	QPGA040-05005	POLY BAG, X2
⚠	7	PGD30002-130	INSTRUCTIONS(FOR PAL)
⚠		PGD30002-113	INSTRUCTIONS(FOR NTSC)
	8	QPGB024-03404	POLY BAG
	9	BT-20046C	TOLL FREE CARD(FOR NTSC)
	10	BT-20109	WARRANTY CARD(FOR NTSC)
	11	PU54821	POLY BAG(FOR NTSC)

4-1

4.2 CHASSIS ASSEMBLY







#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			CHASSIS ASSEMBLY <M2>
	1	PGD10060B-05	TOP COVER ASSY
	2	PGD40027	KNOB GUARD, X12
	3	PGD40298	BUTTON GUIDE, X30
	4	PGD20086-01-02	ESCUTCHEON
	5	PU48692	SHEET, X2
	6	PGD40299	VOL.KNOB, X2
	7	PGD10064-05	FRONT PANEL
	8	PU50507-1-1	COUNTER KNOB, X6
	9	PGD20090-02	WINDOW
	10	PGD30011-2	JVC MARK
	12	PGD40293	PWB BRACKET(A), X2
	13	PGD40294	PWB BRACKET(B), X3
	14	PRD30196	SEARCH KNOB, X2
	15	PRD41818	TIRE, X2
	16	DPSP2006Z	SCREW, X6
	17	PRD41819A	JOG KNOB ASSY, X2
	18	YWS3004B	SET SCREW, X2
	19	PGD20087-01-01	SIDE COVER(L)
	20	PGD20088-01-01	SIDE COVER(R)
	21	PGD10065B	MAIN CHASSIS ASSY
	22	PGZ00084-020	SLIDE VOLUM ASSEMBLY(P)
	23	PGZ00084-019	SLIDE VOLUM ASSEMBLY(R)
	24	PGS20128G-02	SEARCH/JOG CONTROL ASSY
	26	Q03093-829	WASHER, X4
	27	DPSP2006Z	SCREW, X4
	28	PRD42208	SPACER, X4
	29	SPSP3008Z	SCREW, X8
	32	PGD20214-02	CONNECTOR SHEET(FOR PAL)
		PGD20214-01-02	CONNECTOR SHEET(FOR NTSC)
	33	PGD20089-02	REAR BRACKET
	35	PGE40048-02	FRAME SELECT SW BOARD
	36	QSS2201-004	SLIDE SWITCH
	38	PGD30457	PWB BRACKET
	39	PGD40925	LABEL
	41	PGD10062B	BOTTOM COVER ASSY
	42	QZF2207-001	FOOT, X4
⚠	43	PGD30006-48	SERIAL NO.PLATE(FOR NTSC)
⚠		PGD30006-57	SERIAL NO PLATE(FOR PAL)
	44	SDBP3006N	SCREW, X30
	45	SPST3006Z	SCREW, X16
	46	SDBP3006M	SCREW, X4
	47	SDBP2004M	SCREW, X4
	48	SPSP2610Z	SCREW, X4
	49	WAS2000Z	WASHER, X4
	50	SPSA3008Z	SCREW, X16
	51	SDBP2006M	SCREW, X7
	52	NDBP2004N	SCREW
	53	WBS3000N	WASHER, X2
	54	WNB3000N	WASHER, X2

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified parts numbers.

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
			**********
			**********
			* 5.1 MAIN BOARD ASSEMBLY <01> *
			**********
	PWBA	PGZ00880-010	MAIN BOARD ASSEMBLY
	IC1	TMPZ84C00AP	IC
	IC2	PGZ00084-028-9	IC
	IC3	UPD446C-2	IC
	IC4	M74HC138P	IC
	IC5	M74HC139P	IC
	IC6	M74HC14P	IC
	IC7	M74HC74P	IC
	IC8	M74HC32P	IC
	IC9	HD14011B	IC
	IC10	HD14073B	IC
	IC11	M5M82C55AP-2	IC
	IC12	M50782SP	IC
	IC13	PGD30450-1-3	IC
	IC14	VC2054	IC
	IC15	VC2054	IC
	IC16	HD14520B	IC
	IC17	BA618	IC
	IC18	M54519P	IC
	IC19	M54519P	IC
	IC20	HD14011B	IC
	IC21	HD14078B	IC
	IC22	HD14078B	IC
	IC23	HD14078B	IC
	IC24	HD14069UB	IC
	IC25	HD14069UB	IC
	IC26	HD14069UB	IC
	IC27	HD14069UB	IC
	IC28	TMP82C55AN-2	IC
	IC29	TMP82C55AN-2	IC
	IC30	TMP82C55AN-2	IC
	IC31	M54519P	IC
	IC32	HD14066B	IC
	IC33	M54519P	IC
	IC34	M54519P	IC
	IC35	M54519P	IC
	IC36	HD14078B	IC
	IC38	HD14081B	IC
	IC40	HD14013B	IC
	IC41	M54519P	IC
	IC42	HD14069UB	IC
	IC43	HD14069UB	IC
	IC44	HD14069UB	IC
	IC45	HD14069UB	IC
	IC46	HD14069UB	IC
	IC47	HD14069UB	IC
	IC48	HD14069UB	IC
	IC49	HD14069UB	IC
	IC50	HD14078B	IC
	IC51	HD14066B	IC
	IC52	M54519P	IC
	IC53	M54519P	IC
	IC54	HD14066B	IC
	IC55	HD14066B	IC
	IC56	M54519P	IC
	IC57	M54519P	IC
	IC58	M54519P	IC
	IC59	HD14001B	IC
	IC60	BA222	IC
	IC61	M54519P	IC
	IC62	M54519P	IC
	IC63	UPD7564CS-088	IC
	IC64	UPD7564CS-088	IC
	IC65	HD14051B	IC
	IC66	HD14051B	IC
	IC67	UPC358C	IC
	IC68	UPC358C	IC
	IC69	M54533P	IC
	IC70	M51958BL	IC
	Q2	DTA124EF	TRANSISTOR
	Q4	DTC124EF	TRANSISTOR
	Q5	DTA124EF	TRANSISTOR
	Q6	DTA124EF	TRANSISTOR
	Q7	2SD636Q	TRANSISTOR
	Q8	2SD636Q	TRANSISTOR
	Q9	DTC124EF	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	RD10EB2	ZENER DIODE
	D8	1SS133	DIODE
	D9	1SS133	DIODE
	D10	1SS133	DIODE
	D11	1SS133	DIODE
	D12	1SS133	DIODE
	D13	1SS133	DIODE
	D14	1SS133	DIODE
	D15	1SS133	DIODE
	D16	1SS133	DIODE
	D17	1SS133	DIODE
	D18	1SS133	DIODE
	D19	1SS133	DIODE
	D20	1SS133	DIODE
	D21	1SS133	DIODE
	D22	1SS133	DIODE
	D23	1SS133	DIODE
	D24	1SS133	DIODE
	D25	PK44LF-K5	DIODE
	D26	RK44LF-K5	DIODE
	D27	1SS133	DIODE
	D28	1SS133	DIODE
	D29	1SS133	DIODE
	D30	1SS133	DIODE
	D31	1SS133	DIODE
	D32	1SS133	DIODE
	D33	1SS133	DIODE
	D34	1SS133	DIODE
	D35	1SS133	DIODE
	D36	1SS133	DIODE
	D37	1SS133	DIODE
	D38	1SS133	DIODE
	D39	1SS133	DIODE
	D40	1SS133	DIODE
	D41	1SS133	DIODE
	D42	1SS133	DIODE
	D43	1SS133	DIODE
	D44	1SS133	DIODE
	D45	1SS133	DIODE
	D46	RD7.5EB2	ZENER DIODE
	D47	1SS133	DIODE
	D48	1SS133	DIODE
	D49	1SS133	DIODE
	D50	1SS133	DIODE
	D51	1SS133	DIODE
	D52	1SS133	DIODE
	D53	1SS133	DIODE
	D54	RD10EB2	ZENER DIODE
	D56	1SS133	DIODE
	D57	RD7.5EB2	ZENER DIODE
	D58	1SS133	DIODE
	D59	1SS133	DIODE
	D60	1SS133	DIODE
	D61	1SS133	DIODE
	D62	1SS133	DIODE
	D63	1SS133	DIODE
	D64	1SS133	DIODE
	D65	1SS133	DIODE
	D66	1SS133	DIODE
	D67	1SS133	DIODE
	D68	1SS133	DIODE
	D69	1SS133	DIODE
	D70	1SS133	DIODE
	D71	1SS133	DIODE
	D72	1SS133	DIODE
	D73	1SS133	DIODE
	D74	1SS133	DIODE
	DA1	DAN801	DIODE ARRAY
	DA2	DAP801	DIODE ARRAY
	DA3	DAN801	DIODE ARRAY
	DA4	DAP801	DIODE ARRAY
	DA5	DAN601	DIODE ARRAY
	DA6	DAP601	DIODE ARRAY
	DA7	DAN801	DIODE ARRAY
	DA8	DAP801	DIODE ARRAY
	DA9	DAN401	DIODE ARRAY
	DA10	DAP401	DIODE ARRAY

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	DA11	DAN801	DIODE ARRAY
	DA12	DAP801	DIODE ARRAY
	DA13	DAN401	DIODE ARRAY
	DA14	DAP401	DIODE ARRAY
	DA15	DAN801	DIODE ARRAY
	DA16	DAP801	DIODE ARRAY
	DA17	DAN601	DIODE ARRAY
	DA18	DAP601	DIODE ARRAY
	DA19	DA203	DIODE ARRAY
	DA20	DA203	DIODE ARRAY
	DA21	DA203	DIODE ARRAY
	DA22	DA203	DIODE ARRAY
	DA23	DA203	DIODE ARRAY
	DA24	DA203	DIODE ARRAY
	DA25	DA203	DIODE ARRAY
	DA26	DA203	DIODE ARRAY
	R1	QRD161J-105	RESISTOR
	R2	QRD161J-472	RESISTOR
	R3	QRD161J-103	RESISTOR
	R4	QRD161J-333	RESISTOR
	R5	QRD161J-0R0	RESISTOR
	R6	QRD161J-0R0	RESISTOR
	R7	QRD161J-471	RESISTOR
	R8	QRD161J-334	RESISTOR
	R9	QRD161J-334	RESISTOR
	R10	QRD161J-334	RESISTOR
	R11	QRD161J-221	RESISTOR
	R12	QRD161J-221	RESISTOR
	R13	QRD161J-221	RESISTOR
	R14	QRD161J-221	RESISTOR
	R15	QRD121J-680	RESISTOR
	R16	QRD121J-680	RESISTOR
	R17	QRD121J-680	RESISTOR
	R18	QRD121J-680	RESISTOR
	R19	QRD121J-680	RESISTOR
	R20	QRD121J-680	RESISTOR
	R21	QRD121J-680	RESISTOR
	R22	QRD121J-680	RESISTOR
	R23	QRD161J-334	RESISTOR
	R24	QRD161J-104	RESISTOR
	R25	QRD161J-183	RESISTOR
	R26	QRD161J-823	RESISTOR
	R27	QRD161J-823	RESISTOR
	R28	QRD161J-334	RESISTOR
	R29	QRD161J-101	RESISTOR
	R30	QRD161J-823	RESISTOR
	R31	QRD161J-101	RESISTOR
	R32	QRD161J-103	RESISTOR
	R33	QRD161J-101	RESISTOR
	R34	QRD161J-103	RESISTOR
	R35	QRD161J-823	RESISTOR
	R36	QRD161J-823	RESISTOR
	R37	QRD161J-334	RESISTOR
	R38	QRD161J-153	RESISTOR
	R39	QRD161J-153	RESISTOR
	R40	QRD161J-393	RESISTOR
	R41	QRD161J-393	RESISTOR
	R42	QRD161J-222	RESISTOR
	R43	QRD161J-393	RESISTOR
	R44	QRD161J-393	RESISTOR
	R45	QRD161J-153	RESISTOR
	R46	QRD161J-153	RESISTOR
	R47	QRD161J-102	RESISTOR
	R48	QRD161J-102	RESISTOR
	R49	QRD161J-102	RESISTOR
	R50	QRD161J-102	RESISTOR
	R51	QRD161J-102	RESISTOR
	R52	QRD161J-334	RESISTOR
	R53	QRD161J-334	RESISTOR
	R54	QRD161J-334	RESISTOR
	R55	QRD161J-222	RESISTOR
	R56	QRD161J-222	RESISTOR
	R57	QRD161J-222	RESISTOR
	R58	QRD161J-122	RESISTOR
	R59	QRD161J-472	RESISTOR
	R60	QRD161J-823	RESISTOR
	R61	QRD161J-823	RESISTOR
	R62	QVP4A0B-332	V RESISTOR
	R63	QVP4A0B-332	V RESISTOR
	R64	QRD161J-331	RESISTOR
	R65	QRD161J-102	RESISTOR
	R66	QRD161J-473	RESISTOR
	R67	QRD161J-473	RESISTOR
	R68	QRD161J-102	RESISTOR
	R69	QVP4A0B-332	V RESISTOR
	R70	QRD161J-103	RESISTOR
	R71	QRV143F-1302	RESISTOR
	R72	QRD161J-822	RESISTOR
	R73	QRD161J-333	RESISTOR
	R74	QRD161J-104	RESISTOR
	R75	QRV143F-1102	RESISTOR
	R76	QRD161J-682	RESISTOR
	R77	QRD161J-392	RESISTOR
	R78	QRD161J-472	RESISTOR
	R79	QRD161J-562	RESISTOR
	R80	QRD161J-334	RESISTOR
	R81	QRD161J-334	RESISTOR
	R82	QRD161J-334	RESISTOR
	R83	QRD161J-104	RESISTOR
	R84	QRD161J-472	RESISTOR
	R85	QRD161J-104	RESISTOR
	R86	QRD161J-823	RESISTOR
	R87	QRD161J-823	RESISTOR
	R88	QRD161J-823	RESISTOR
	R89	QRD161J-823	RESISTOR
	R90	QRD161J-334	RESISTOR
	R91	QRD161J-823	RESISTOR
	R92	QRD161J-823	RESISTOR
	R93	QRD161J-101	RESISTOR
	R94	QRD161J-101	RESISTOR
	R95	QRD161J-103	RESISTOR
	R97	QRD161J-101	RESISTOR
	R98	QRD161J-104	RESISTOR
	R99	QRD161J-473	RESISTOR
	R100	QVP4A0B-472	V RESISTOR
	R101	QRD161J-331	RESISTOR
	R102	QRD161J-222	RESISTOR
	R103	QRD161J-334	RESISTOR
	R104	QRD161J-122	RESISTOR
	R105	QRD161J-472	RESISTOR
	R106	QRD161J-331	RESISTOR
	R107	QRD161J-102	RESISTOR
	R108	QRD161J-102	RESISTOR
	R109	QRD161J-473	RESISTOR
	R110	QRD161J-473	RESISTOR
	R111	QRD161J-103	RESISTOR
	R112	QVP4A0B-332	V RESISTOR
	R113	QRD161J-822	RESISTOR
	R114	QRD161J-333	RESISTOR
	R115	QRD161J-104	RESISTOR
	R116	QRV143F-1102	CMF RESISTOR
	R117	QRV143F-1302	CMF RESISTOR
	R118	QRD161J-562	RESISTOR
	R119	QRD161J-472	RESISTOR
	R120	QRD161J-392	RESISTOR
	R121	QRD161J-682	RESISTOR
	R122	QRD161J-334	RESISTOR
	R123	QRD161J-334	RESISTOR
	R124	QRD161J-334	RESISTOR
	R125	QRD161J-104	RESISTOR
	R126	QRD161J-102	RESISTOR
	R127	QRD161J-102	RESISTOR
	R128	QRD161J-102	RESISTOR
	R129	QRD161J-102	RESISTOR
	R130	QRD161J-102	RESISTOR
	R131	QRD161J-334	RESISTOR
	R132	QRD161J-153	RESISTOR
	R133	QRD161J-153	RESISTOR
	R134	QRD161J-334	RESISTOR
	R135	QRD161J-334	RESISTOR
	R136	QRD161J-334	RESISTOR
	R137	QRD161J-334	RESISTOR
	R138	QRD161J-823	RESISTOR
	R139	QRD161J-102	RESISTOR
	R140	QRD161J-102	RESISTOR
	R150	QRD161J-331	RESISTOR
	R151	QRD161J-331	RESISTOR
	R152	QRD161J-103	RESISTOR
	R153	QRD161J-223	RESISTOR
	R154	QRD161J-472	RESISTOR
	R155	QRD161J-472	RESISTOR
	RA1	EXB-P84474M	RESISTOR ARRAY
	RA2	EXB-P88334M	RESISTOR ARRAY

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	RA3	EXB-P85104M	RESISTOR ARRAY
	RA4	EXB-P88104M	RESISTOR ARRAY
	RA5	EXB-P85104M	RESISTOR ARRAY
	RA6	EXB-P88334M	RESISTOR ARRAY
	RA7	EXB-P88334M	RESISTOR ARRAY
	RA8	EXB-P88334M	RESISTOR ARRAY
	RA9	EXB-RB8472J	RESISTOR ARRAY
	RA10	EXB-RB8472J	RESISTOR ARRAY
	RA11	EXB-RB8472J	RESISTOR ARRAY
	RA12	EXB-P84104M	RESISTOR ARRAY
	RA13	EXB-P85474M	RESISTOR ARRAY
	RA14	EXB-P88334M	RESISTOR ARRAY
	RA15	EXB-P88223M	RESISTOR ARRAY
	RA16	EXB-P88334M	RESISTOR ARRAY
	RA17	EXB-P84222M	RESISTOR ARRAY
	RA18	EXB-P84104M	RESISTOR ARRAY
	RA19	EXB-P88223M	RESISTOR ARRAY
	RA20	EXB-P85474M	RESISTOR ARRAY
	RA21	EXB-P84153M	RESISTOR ARRAY
	RA22	EXB-P84153M	RESISTOR ARRAY
	RA23	EXB-P84153M	RESISTOR ARRAY
	RA24	EXB-P84153M	RESISTOR ARRAY
	RA25	EXB-P85474M	RESISTOR ARRAY
	RA26	EXB-P84334M	RESISTOR ARRAY
	C1	QCS11HJ-330	CAPACITOR
	C2	QCS11HJ-330	CAPACITOR
	C3	QFN41HJ-683	M CAPACITOR
	C4	QFN41HJ-333	M CAPACITOR
	C5	QFN41HJ-103	M CAPACITOR
	C6	QCS11HJ-101	CAPACITOR
	C7	QCS11HJ-330	CAPACITOR
	C8	QCS11HJ-330	CAPACITOR
	C9	QEN41CM-226	NP CAPACITOR
	C10	QFN41HJ-223	M CAPACITOR
	C11	QFN41HJ-223	M CAPACITOR
	C12	QFN41HJ-223	M CAPACITOR
	C13	QFN41HJ-223	M CAPACITOR
	C14	QFN41HJ-223	M CAPACITOR
	C15	QFN41HJ-223	M CAPACITOR
	C16	QFN41HJ-223	M CAPACITOR
	C17	QFN41HJ-223	M CAPACITOR
	C18	QFN41HJ-223	M CAPACITOR
	C19	QFN41HJ-223	M CAPACITOR
	C20	QFN41HJ-223	M CAPACITOR
	C21	QFN41HJ-223	M CAPACITOR
	C22	QFN41HJ-223	M CAPACITOR
	C23	QFN41HJ-223	M CAPACITOR
	C24	QFN41HJ-223	M CAPACITOR
	C25	QFN41HJ-223	M CAPACITOR
	C26	QFN41HJ-223	M CAPACITOR
	C27	QFN41HJ-223	M CAPACITOR
	C28	QFN41HJ-103	M CAPACITOR
	C29	QFN41HJ-103	M CAPACITOR
	C30	QFN41HJ-103	M CAPACITOR
	C31	QFN41HJ-103	M CAPACITOR
	C32	QFN41HJ-103	M CAPACITOR
	C33	QETA1CM-336	E CAPACITOR
	C34	QETA1CM-336	E CAPACITOR
	C36	QETA1CM-228	E CAPACITOR
	C37	QETA1AM-108	E CAPACITOR
	C38	QFN41HJ-223	M CAPACITOR
	C39	QEN41HM-474	NP E CAPACITOR
	C40	QEN41HM-474	NP E CAPACITOR
	C41	QFN41HJ-223	M CAPACITOR
	C42	QFN41HJ-223	M CAPACITOR
	C43	QFN41HJ-223	M CAPACITOR
	C44	QFN41HJ-103	M CAPACITOR
	C45	QFN41HJ-103	M CAPACITOR
	C47	QETA1CM-228	E CAACITOR
	C48	QETA1AM-108	E CAPACITOR
	C49	QFN41HJ-223	M CAPACITOR
	C50	QEN41HM-474	NP E CAPACITOR
	C51	QEN41HM-474	NP E CAPACITOR
	C52	QFN41HJ-223	M CAPACITOR
	C53	QFN41HJ-223	M CAPACITOR
	C54	QFN41HJ-223	M CAPACITOR
	C55	QFN41HJ-223	M CAPACITOR
	C56	QFN41HJ-103	M CAPACITOR
	C57	QFN41HJ-103	M CAPACITOR
	C58	QETA1CM-226	E CAPACITOR
	C59	QETA1CM-226	E CAPACITOR
	C60	QCS11HJ-101	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C61	QCS11HJ-101	CAPACITOR
	C63	QETA1HM-105	E CAPACITOR
	C64	QETA1CM-336	E CAPACITOR
	C65	QETA1CM-336	E CAPACITOR
	C66	QETA1HM-105	E CAPACITOR
	C67	QCS11HJ-101	CAPACITOR
	C68	QCS11HJ-101	CAPACITOR
	C70	QFN41HJ-103	M CAPACITOR
	C81	QFN41HJ-222	M CAPACITOR
	C86	QEN40JM-108	E CAPACITOR
	C92	QFN41HJ-223	M CAPACITOR
	C93	QEN41HM-106	E CAPACITOR
	C97	QFN41HJ-222	M CAPACITOR
	C106	QEN41HM-106	E CAPACITOR
	C107	QFN41HJ-222	M CAPACITOR
	C110	QFN41HJ-222	M CAPACITOR
	C122	QEN40JM-108	E CAPACITOR
	C150	QFN41HJ-223	M CAPACITOR
	C151	QFN41HJ-223	M CAPACITOR
	C152	QFN41HJ-223	M CAPACITOR
	C153	QFN41HJ-223	M CAPACITOR
	C154	QFN41HJ-223	M CAPACITOR
	C155	QFN41HJ-223	M CAPACITOR
	C156	QETA1HM-335	E CAPACITOR
	C157	QETA1HM-335	E CAPACITOR
	C158	QCS11HJ-560	CAPACITOR
	CF1	PGZ00883	CERAMIC FILTER
	CF2	PGZ00758	CERAMIC FILTER
⚠	CF3	PU50224	RESONATOR, X2
⚠	CF4	PU50224	CERAMIC FILTER
	SW2	QSS1K41-L01	DIP SW2
	DD1	PGZ00931	DC/DC CONV.
	DD2	PGZ00931	DC/DC CONV.
	HD1	PU51212	FUSE CLIP, X4
	SKT1	PGZ00331-028	IC SOCKET
⚠	VA1	PU49624-2	VARISTOR(VA1,2)
	TP1	PGZ00880-005	TEST PIN (TP8-11)
	CN1	PU58844-6	CONNECTOR
	CN2	PU58844-8	CONNECTOR
	CN3	PU58844-12	CONNECTOR
	CN4	PU58844-7	CONNECTOR
	CN5	PU58844-5	CONNECTOR
	CN6	PU58844-8	CONNECTOR
	CN7	PU58844-8	CONNECTOR
	CN8	PU58844-5	CONNECTOR
	CN9	PU58844-6	CONNECTOR
	CN10	PU58844-8	CONNECTOR
	CN11	PU58844-8	CONNECTOR
	CN12	PU58844-12	CONNECTOR
	CN13	PU58844-9	CONNECTOR
	CN14	PU58844-8	CONNECTOR
	CN15	PU58844-10	CONNECTOR
	CN16	PU58844-10	CONNECTOR
	CN17	PU58844-9	CONNECTOR
	CN18	PU58844-9	CONNECTOR
	CN19	PU58844-8	CONNECTOR
	CN20	PU58844-8	CONNECTOR
	CN21	PU58844-10	CONNECTOR
	CN22	PU58844-5	CONNECTOR
	CN23	PU58844-5	CONNECTOR
	CN24	PU58844-9	CONNECTOR
	CN25	PU58844-8	CONNECTOR
	CN26	PU58844-2	CONNECTOR
	BZ1	PGZ00084-026	BUZZER
⚠	F1	QMF51E2-1R0	FUSE,NOT INCL B.ASSY(PA)
⚠		QMF51U1-1R0	FUSE,NOT INCL B.ASSY(NT C)
⚠	F2	QMF51E2-1R0	FUSE,NOT INCL B.ASSY(PA)
⚠		QMF51U1-1R0	FUSE,NOT INCL B.ASSY(NT C)

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
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			**********
			* 5.2 OPERATION BOARD ASSEMBLY <02> *
			**********
	PWBA	PGZ00880-011	OPERATION BOARD ASSEMBLY
	Q1	2SB644S	TRANSISTOR
	Q2	2SB644S	TRANSISTOR
	Q3	2SB644S	TRANSISTOR
	Q4	2SB644S	TRANSISTOR
	Q5	2SB644S	TRANSISTOR
	Q6	2SB644S	TRANSISTOR
	Q7	2SB644S	TRANSISTOR
	Q8	2SB644S	TRANSISTOR
	Q9	2SB644S	TRANSISTOR
	Q10	2SB644S	TRANSISTOR
	Q11	2SB644S	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D7	1SS133	DIODE
	D8	1SS133	DIODE
	D9	1SS133	DIODE
	D10	1SS133	DIODE
	D11	1SS133	DIODE
	R1	QRD161J-473	RESISTOR
	R2	QRD161J-473	RESISTOR
	R3	QRD161J-473	RESISTOR
	R4	QRD161J-473	RESISTOR
	R5	QRD161J-473	RESISTOR
	R6	QRD161J-473	RESISTOR
	R7	QRD161J-473	RESISTOR
	R8	QRD161J-473	RESISTOR
	R9	QRD161J-473	RESISTOR
	R10	QRD161J-473	RESISTOR
	R11	QRD161J-473	RESISTOR
	R12	QRD161J-392	RESISTOR
	R13	QRD161J-392	RESISTOR
	R14	QRD161J-392	RESISTOR
	R15	QRD161J-392	RESISTOR
	R16	QRD161J-392	RESISTOR
	R17	QRD161J-392	RESISTOR
	R18	QRD161J-392	RESISTOR
	R19	QRD161J-392	RESISTOR
	R20	QRD161J-392	RESISTOR
	R21	QRD161J-392	RESISTOR
	R22	QRD161J-392	RESISTOR
	R23	QRD161J-221	RESISTOR
	R24	QRD161J-221	RESISTOR
	R25	QRD161J-221	RESISTOR
	R26	QRD161J-221	RESISTOR
	R31	QRD161J-221	RESISTOR
	R32	QRD161J-221	RESISTOR
	R33	QRD161J-221	RESISTOR
	R34	QRD161J-221	RESISTOR
	R35	QRD161J-221	RESISTOR
	R36	QRD161J-221	RESISTOR
	R37	QRD161J-221	RESISTOR
	R38	QRD161J-221	RESISTOR
	R39	QRD161J-221	RESISTOR
	R40	QRD161J-221	RESISTOR
	C1	QER41EM-106	E CAPACITOR
	C2	QER41EM-106	E CAPACITOR
	C3	QER41EM-106	E CAPACITOR
	C4	QER41EM-106	E CAPACITOR
	C5	QER41EM-106	E CAPACITOR
	C6	QER41EM-106	E CAPACITOR
	C7	QER41EM-106	E CAPACITOR
	C8	QER41EM-106	E CAPACITOR
	C9	QER41EM-106	E CAPACITOR
	C10	QER41EM-106	E CAPACITOR
	C11	QER41EM-106	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	S1	PGZ00155	PUSH SWITCH
	S2	PGZ00155	PUSH SWITCH
	S3	PGZ00155-7	PUSH SWITCH
	S4	PGZ00155-6-1	PUSH SWITCH
	S5	PGZ00155-8	PUSH SWITCH
	S6	PGZ00155-2-1	PUSH SWITCH
	S7	PGZ00155-2-1	PUSH SWITCH
	S8	PGZ00155-9	PUSH SWITCH
	S9	PGZ00155-8	PUSH SWITCH
	S10	PGZ00155-2-1	PUSH SWITCH
	S11	PGZ00155-2-1	PUSH SWITCH
	S12	PGZ00155	PUSH SWITCH
	S13	PGZ00155	PUSH SWITCH
	S14	PGZ00155-7	PUSH SWITCH
	S15	PGZ00155-6-1	PUSH SWITCH
	S16	PGZ00155-5	PUSH SWITCH
	S17	PGZ00155-4	PUSH SWITCH
	S18	PGZ00155-4	PUSH SWITCH
	S19	PGZ00155-10	PUSH SWITCH
	S20	PGZ00155	PUSH SWITCH
	S21	PGZ00155	PUSH SWITCH
	S22	PGZ00155	PUSH SWITCH
	S23	PGZ00155	PUSH SWITCH
	S24	PGZ00155	PUSH SWITCH
	S25	PGZ00155	PUSH SWITCH
	S26	PGZ00155	PUSH SWITCH
	S27	PGZ00155	PUSH SWITCH
	S28	PGZ00155	PUSH SWITCH
	S29	PGZ00155	PUSH SWITCH
	S30	PGZ00155	PUSH SWITCH
	S31	PGZ00155	PUSH SWITCH
	S32	PGZ00155	PUSH SWITCH
	S33	PGZ00156-6	PUSH SWITCH
	S34	PGZ00156-7	PUSH SWITCH
	S35	PGZ00156-6	PUSH SWITCH
	LP1	PGZ00155-LAMP	LAMP,X32
	LP2	PGZ00156-LAMP	LAMP,X3
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			**********
			* 5.3 REAR BOARD ASSEMBLY <03> *
			**********
	PWB	PGZ00284-3	REAR BOARD
	PD1	PU49624-2	VARISTOR
	PD4	PU49624-2	VARISTOR
	PD5	PU49624-2	VARISTOR
	PD8	PU49624-2	VARISTOR
	SW1	QSS2301-003	SLIDE SWITCH
	J1	PGZ00221-2	2P JACK ASSY, X2
			**********
			**********
			* 5.4 DIP SW BOARD ASSEMBLY <04> *
			**********
	PWBA	PGZ00880-012	DIP SW BOARD ASSEMBLY
	R1	QRD161J-103	RESISTOR
	R2	QRD161J-103	RESISTOR
	R3	QRD161J-103	RESISTOR
	R4	QRD161J-103	RESISTOR
	R5	QRD161J-331	RESISTOR
	R6	QRD161J-332	RESISTOR
	R7	QRD161J-331	RESISTOR
	R8	QRD161J-332	RESISTOR
	R9	QRD161J-331	RESISTOR
	R10	QRD161J-331	RESISTOR
	SW1	PU52746-108	DIP SWITCH
⚠	VA1	PU49624-2	VARISTOR
⚠	VA2	PU49624-2	VARISTOR
⚠	VA3	PU49624-2	VARISTOR
⚠	VA4	PU49624-2	VARISTOR
⚠	VA5	PU49624-2	VARISTOR
⚠	VA6	PU49624-2	VARISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	VA7	PU49624-2	VARISTOR
⚠	VA8	PU49624-2	VARISTOR
⚠	VA9	PU49624-2	VARISTOR
⚠	VA10	PU49624-2	VARISTOR

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* 5.5 DISPLAY BOARD ASSEMBLY <08> *
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PWBA	PGZ00881A-02	DISPLAY BOARD ASSENBLY
IC1	TC74HC238F	IC
IC2	TC74HC238F	IC
IC3	TD62503F	IC
IC4	TD62503F	IC
IC5	TD62503F	IC
D1	LD-001VR	LE DIODE
D2	LD-001VR	LE DIODE
D3	LD-603MG	LE DIODE
D4	LD-603MG	LE DIODE
D5	LD-001VR	LE DIODE
D6	LD-001VR	LE DIODE
D7	LD-603MG	LE DIODE
D8	LD-603MG	LE DIODE
D9	SLB-25MG	LE DIODE
D10	SLB-25MG	LE DIODE
D11	1SS133	DIODE
D12	LB-602VK	LE DIODE
D13	LB-602VK	LE DIODE
D14	LB-602VK	LE DIODE
D15	LB-602VK	LE DIODE
D16	LB-602VK	LE DIODE
D17	LB-602VK	LE DIODE
D18	LB-602VK	LE DIODE
D19	LB-602VK	LE DIODE
R1	QRD167J-181	RESISTOR
R2	QRD167J-181	RESISTOR
R3	NRS016G-470N	RESISTOR
R4	NRS016G-470N	RESISTOR
R5	QRD167J-181	RESISTOR
R6	QRD167J-181	RESISTOR
R7	NRS016G-470N	RESISTOR
R8	NRS016G-470N	RESISTOR
R9	QRD167J-331	RESISTOR
R10	QRD167J-331	RESISTOR
R11	QRD167J-104	RESISTOR
C1	QETC1HM-105	E CAPACITOR
S1	PU49344	TACT SWITCH
S2	PU49344	TACT SWITCH
S3	PU49344	TACT SWITCH
S4	PU49344	TACT SWITCH
S5	PU49344	TACT SWITCH
S6	PU49344	TACT SWITCH
CN1	PU58844-6	CONNECTOR
CN2	PU58844-8	CONNECTOR
CN3	PU58844-12	CONNECTOR
CN4	PU58844-7	CONNECTOR
	PGZ00154-021	COVER CASE(1), X2
	PGZ00154-022	PLASTIC FILTER, X2
	PGZ00154-023	COVER CASE(2), X2
	PGZ00154-024	PLASTIC FILTER, X2

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* 5.6 JOG BOARD ASSEMBLY <24> *
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(PI)	GP2L04B	PHOTO SENSOR
PWBA	PGE30105A-02	JOG BOARD ASSEMBLY
IC1	TC4584BP	IC
R1	QRS188J-271YN	RESISTOR
R2	QRSA08J-122YN	RESISTOR
R3	QRS188J-271YN	RESISTOR
R4	QRSA08J-122YN	RESISTOR
R5	QRSA08J-271YN	RESISTOR
R6	QRSA08J-122YN	RESISTOR
R7	QRSA08J-271YN	RESISTOR
R8	QRSA08J-561YN	RESISTOR
R9	QRSA08J-271YN	RESISTOR
R10	QRSA08J-561YN	RESISTOR
C1	QER41EM-475	E CAPACITOR
C2	QCF11HP-103	CAPACITOR
PHS1	GP2L04B	PHOTO SENSOR
PHS2	GP2L04B	PHOTO SENSOR
PHS3	GP2L04B	PHOTO SENSOR
PHS4	GP2L04B	PHOTO SENSOR
PHS5	GP2L04B	PHOTO SENSOR
SPC1	PRD41774-01-01	SPACER
CN1	PU58844-9	CAP HOUSING